















# THE JOURNAL of FAMILY WELFARE

Personal, Marital & Sociological

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# **THE JOURNAL OF FAMILY WELFARE**

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# **The Journal of Family Welfare**

**Personal, Marital & Sociological**

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## **PEOPLE : THE KEY RESOURCE**

**MRS. AVABAI B. WADIA**

*President, International Planned Parenthood Federation*

### **People**

I would like to start with two questions. Who are people? Why are they called a Resource?

In the context of the movement to spread family planning as a human right and to achieve a balance between population, development and environment, "people" are often forgotten under the aggregation of "population"

In such a situation do they become a resource or do they tend to be mistakenly regarded more like a liability?

Rapid population growth is a problem in many countries, but I would not translate that into saying that people are a problem.

I once read in an American business magazine about the hard-headed methods of brokers who, in order to sell securities, have resort to experts who are known as analysts, as well as strategies and economists. The two categories consider stock market fluctuations from different perspectives. The analysts use a "bottom up" approach focussing on individual companies. The strategies and economists go in for a "top down" exercise which covers a wider area including trends and events outside the purview of any single company.

The bottom up approach tends to be more optimistic since they look out for the favourable elements which will induce clients to "buy", whereas the wider outlook may not be so rosy

Although in sociological terms the "top down" and "bottom up" approaches have quite different connotations, there is something of an analogy here. Talking about population requires a broad canvas for strategies but sometimes gives us a feeling of cold comfort, owing to the enormous dimensions of the problem. People, on the other hand, are individuals. Like individual companies, some are sound and others may be shaky. Some are good managers of their own lives; others are not. Such good managers appear even in the vulnerable sectors within the parameters set by poverty, ignorance and oppression—a fact that is often missed by macro-planners. But there the analogy ends.

If we can develop a sensitivity and feeling of compassion, it is clear that most people have a visible or latent potential. Each one is an individual, is a unit in his immediate family and community, rather than being an amorphous part of a vast aggregation called population. If this is so, then those who fall into a vulnerable category *can* emerge out of it with the right type of effort.

\* Presented at the the Fourth Members' Assembly in November 1986, at Tokyo



It is a fact that out of the 4½ billion people living now, two-thirds are in developing countries and most of them exist precariously with deprivation as a daily part of life. But, they are, nevertheless, people, and in the dynamics of changing societies in the third world, are mobile in some direction, perceptibility or not. This direction can be upwards if the right stimuli can be applied.

This is the crux of the problem. It is the poor, the unlettered, those with lack of opportunity or access to better living standards, who must be counted and count as "people", in the process of becoming a resource.

For the better-off have reached a desired level. They too are a resource and already resourceful. It is those below that level who provide the challenges in any meaningful organised efforts.

### Resources

The dictionary meaning of the word "resource" is "supplying a want", "a stock that can be drawn on", and resourcefulness is "skill in showing practical ingenuity".

So the title of my talk would mean that people as such *can be drawn upon, can supply a want, and are capable of practical activity*.

The question of people as a key resource is one where those large numbers of individuals in all countries, (though more needfully in the developing world) can be galvanised into action for various purposes which can result in the removal of poverty and its concomitants, and the adoption of positive measures in matters of health, education, employment, shelter, and the betterment of individual and family life.

### Approaches

Many approaches have at times been tried to draw people in, some of them authoritarian, others philanthropic or charitable or under some patronage. All of them can produce some results. But experiences gathered over the years and under many circumstances have led to the conclusion that what is called a participatory approach brings far more lasting results.

Such an approach implies, a *respect* for even the lowliest. It also means realising that people *understand*. Illiteracy, poverty, apathy, lack of opportunity, even an attitude of resignation, are curable. They may not see any means at hand, and may be resigned or angry, but they know in some corner of their minds, that it can be done. People *respond*. They may not be able to assess their wants in terms of options that are available, or those that can be created, but given a helping hand and some financial and technical assistance, they will react and profit from their experiences, good or bad. People will *strive*. They need a trigger, a key galvaniser, a person, a cause, an understood necessity or compulsion and they will be activated.

By understanding, responding and striving, people become a key resource—that "stock" that can be drawn on, those individuals with "skill" and "ingenuity".

### **Voluntary Organisations**

People's organisations in some form or another abound in every society everywhere. They may be in tribes, in clans, in castes, groups that are inequitable, fragile, fractionalised, but to some extent or another, they render mutual help and support. These have ancient roots but many groups are now taking modern forms and are more inclusive, and established consciously to further special objectives.

There is a long history of voluntary work especially in the older countries and voluntary organisations have, in many cases, been particularly effective in breaking down the barriers erected by ignorance, fear, superstitions, social or economic vested interests, and the exploitation of the weaker sections by more powerful ones. Reforms to abolish slavery, prison reform, providing nursery services near battlefields, providing minimum necessities in slums and educational and health opportunities for the poor, have most often started as voluntary work. In the field of family planning, it was Margaret Sanger, a qualified nurse, who started the ball rolling—which has now gone round the world.

Rafael Salas has aptly stated : Non-governmental organisations have no equals as creators and communicators of a common will out of millions of attitudes and opinions. They emerge and continue out of the involvement and commitment of individuals, and are in a position to inform government of the needs and wishes of these people".

Organised NGOs are today recognised as effective change agents and have now won international and national recognition in many countries.

The IPPF has become a powerful force and will retain its effectiveness so long as its national and international volunteers continue to follow the basic tenet often expressed as working "for the people, with the people and by the people".

### **Activating People**

In practical terms, people are an effective resource when they come together for fulfilling any purpose. Their active participation is the key strategy to create a resource bank, whether it be of people or of goods, or both. Such participation partakes of various aspects; but primarily, it means that all those involved should have collectively, the opportunity to make decisions, to implement them, and to receive the benefits of results thereof; it is then more likely that felt needs would be tackled with the labour and effort of the community itself. Such participation, or community action, has an immense, inherent value in bringing out latent skills and initiating a keen desire to learn more or to enhance skills.

In truth, community participation can be its own catalyst to galvanise the community into action and reduce apathy.

However, in deprived communities entrapped in grinding poverty, an external helping hand is needed.

### **Lessons For NGOs**

This is where organised NGOs can be useful but must prepare themselves

(and this is no easy task) not to become benefactors to passive receivers, but to take the more difficult path of evoking, even where conditions of poverty and deprivation prevail, that vital spark in people whereby they begin to be aware of their own potential.

Evoking people's participation involves many learning exercises that NGOs and those who wish to adopt this approach must undertake. They have to realise that the needs expressed by people may not be applicable to the majority but one or two sections only, since even the smallest community is not necessarily homogeneous. Traditional leaders are a powerful force, but where new democratic forms like elections have been introduced (for example, Panchayati Raj in the Indian Ocean Region countries) the two leaderships may diverge, but both need to be involved, specially not ignoring the "trades" as they may, in fact, be more effective particularly as far as social customs and attitudes are concerned.

Then again, dialogue rather than "telling" people is vital. The "felt needs" which are articulated may not be the most important ones (in an "outsider's" view as for example, building a temple) but genuine enough to the people. Technology and accountability should depend on local capacities rather than complicated impositions. Similarly, the activities where people can be helped to come together for action must be within their means and abilities—but with a little subtle "stretching" induced by the catalytic workers who learn how to help them to do their best.

Finally, community participation and people as a resource is not a miracle cure of all ills. But it is at the core of real development and where successful, does bring about amazing results.

Governments are the main agency to provide an infra-structure and basic minimum needs for the people on a countrywide basis. But it is often the case that even these benefits are not taken advantage of by the people, either through ignorance or due to the indifference of officials. Voluntary agencies have an important role for they can step in and act as a bridge between people and the Government.

Organised NGOs have extensive opportunities for promoting plans and programmes. But for the most part, such organisations are urban-based, whereas in developing countries the real problems still lie in the rural areas. Where villages are concerned, communication itself is a difficult process, both in the sheer physical difficulties of reaching them, (sometimes only by trekking) and in the mental and psychological gap that exists between the educated city-bred person and the village dweller. Therefore, new approaches and organisational innovations are essential.

### **Making Contacts In Communities**

There are several stages before real contact can be made and a process of community involvement begins. Many of our FPAs have realised this and have devised a variety of methodologies according to local conditions. Today, however we are not so much discussing the *process*, as some of the *results* which make

people into a key resource. These results may take several forms but it is the people who are the essential element in both process and result. In other words, when social change (like the adoption of educational or health measures) is sought, the human factor is the most vital one. It is then that people become both the subject and object of their development.

FPA's are acting as catalysts in evoking community participation in many countries and this is a saga in itself, arrived at after much trial and error. While evaluative studies need to be undertaken, anecdotal success stories abound.

### **Examples of People as a Resource**

For instance, the CBD programmes initiated by IPPF in a number of countries are an outstanding example where thousands of volunteers are acting as depot holders and distributing condoms, oral pills and even giving informal advice to customers, including after-sales service.

In India where the FPA has recruited 69,000 village volunteers in its 21 projects covering 3000 villages and a total population of 2.8 million, local volunteers, with some initial training by the FPA teams residing in the areas, and with their stand-by help, are promoting literacy, increasing school attendance of children, conducting adult and continuing education classes (involving local teachers who lend a hand), and organising income-generating activities, firstly for needy persons, and secondly, for strengthening the local volunteer groups themselves by undertaking schemes and ploughing back the profits.

"Shramdan", or the donating of free labour, is a well known way of increasing village amenities and the clubs organise it and chlorination of wells, building of approach roads, community centres, and the like are the result. In the area of health, maternal and child health and family planning, village volunteers have undertaken to organise educational events and the tasks of interpersonal education and motivation of eligible couples to adopt family planning. Their success is an excellent example of what I may call *peer consensus* which is even more effective than so-called peer pressure.

In one of these Projects in Karnataka which operates in 154 villages covering a population of 248,953, the FPAI has a trained team who live in the area, and are familiar with the culture, language and local modes of organisation. They have helped the villagers to form small clubs and 419 have been formed with 13,824 volunteer members. They carry on a variety of activities—cultural, developmental, income-generating, health, family planning, adult literacy, encouraging children's schooling, training courses for themselves and others and many others. The important point is that they have taken a leading part in organising maternal and child health sessions and motivating eligible couples for family planning. They have helped to raise the Couple Protection Rate to 47.2% (the national rate being 32 per cent) in 1981. In income-generating activities, their contribution has been assessed monetarily in man-hours volunteered, in kind, and in cash, and has amounted to substantial sums making a total of an important amount of nearly half a million rupees.

The community has earned out of the income-generating activities carried

on by 886 individuals and 177 clubs (which were self-supporting), and actually reimbursed FPAL in part, for the money it put in, into the Project.

This example is only an illustration of how people, even the poor, can become activists and resourceful not only in voluntary service but in actual money-terms, provided they get the right stimulus. Such examples can be multiplied a thousand-fold in the countries where FPAs function.

# **KNOWLEDGE AND ATTITUDES ABOUT REPRODUCTIVE HEALTH AMONG YOUTH IN SRI LANKA**

**DR. SRIANI BASNAYAKE +**

## **Introduction**

In Sri Lanka today, sex education is not included in the general school curriculum, and only selected schools provide basic science education programmes for their students. A few students may have some opportunity to gather a limited amount of information from their biology studies, but this is not enough. Sex is not a subject that is discussed at home in Sri Lanka and most parents do not understand the need for sex education in schools. This does not mean that teenagers are not interested in this topic; in fact, the opposite is true. The thirst for knowledge and the curiosity and excitement of exploring these hidden spheres is present both in urban and rural societies, among females and males, but the youth of today have little chance of satisfying their curiosity because of the lack of sex education in schools. Further, the dearth of books on this subject leaves teenagers with no alternative but to listen to—and in most cases believe—rumours and myths that have prevailed for centuries.

It has been the experience of the Medical Officers of the Family Planning Association of Sri Lanka that a number of the problems affecting young people attending its clinics stem from ignorance of basic human anatomy and physiology. In addition, many traditional practices and myths surround normal physiological processes such as menarche, menstruation and masturbation, and when young people are not given a scientific explanation of such phenomena, they are left puzzled and unable to differentiate between myth and fact. This, in turn, leads to anxiety and psychological trauma in adults who, as teenagers had held firmly to certain beliefs about sexuality.

Due to the above reasons, the FPA felt that it should take some steps to highlight this unmet need in the educational system of Sri Lanka. A monthly programme entitled "The Facts of Life" began in April 1983 and continued regularly thereafter. This provided an opportunity for a very limited number of young people to be exposed to a basic Family Life Education Programme. Pre- and post-test questionnaires were given to the participants, and judging by pre-test evaluations of each programme, the organisers observed that the knowledge level of the participants on basic human reproductive anatomy and physiology was extremely poor. During the discussions on subjects such as menarche, menstruation, virginity, masturbation, nocturnal emissions, and family planning, it was observed that the majority of the participants had only a

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superficial or vague knowledge of the subject and had never received a scientific explanation about these normal physiological occurrences. It was always very evident that these topics were associated with many ancient myths, taboos and rituals.

### Objectives

In the light of the above observations, the FPA conducted a special survey in 1985, among a sample of 400 urban and rural youth. The main objective was to assess the knowledge and attitudes regarding reproductive health among young adults. The survey was designed to examine closely the following areas:

1. The knowledge level of young people in the field of reproductive health.
2. Attitudes of the respondents towards family formation and towards sexual problems and practices, such as menarche, virginity, masturbation and family size.
3. Prevailing beliefs and social customs associated with natural phenomena and practices such as menarche, menstruation and nocturnal emission.
4. Attitudes of young people towards chastity, virginity, and the customs and practices associated with the "virginity test" (proving virginity on the wedding night).

### Sample

The Reproductive Health Survey was a pilot study that was carried out in two urban communities (Nugegoda and Kiribathgoda) and two rural communities (Haputale and Kahagala) in Sri Lanka. A total of 400 youth aged 16-24 years, were interviewed and the sample was sub-divided into eight clusters of 50 young men and 50 young women from each of the four communities (See Appendix).

**TABLE 1**  
**Characteristics of respondents by residence**

Characteristics	Urban (%)	Rural (%)	Both (%)	Number
<b>Age</b>				
16-19	52.0	49.0	50.5	202
20-24	48.0	51.0	49.5	198
<b>Marital Status</b>				
Married	11.5	11.5	11.5	46
Single	88.5	88.5	88.5	354
<b>Educational Attainment</b>				
None	0.5	0.5	0.5	2
1-5	4.0	11.5	7.7	31
6-10	57.5	57.5	57.5	230
11+	38.0	30.5	34.3	137

TABLE 1 (Continued)  
 Characteristics of respondents by residence

Characteristics	Urban (%)	Rural (%)	Both (%)	Number
Religion				
Buddhist	86.9	99.5	93.2	372
Christian	13.1	0.5	6.8	28
Religiosity				
High	87.5	98.5	93.0	372
Low	10.5	1.5	6.0	24
Not sure	2.0	0.0	1.0	2
Organisational membership				
Yes	33.0	59.0	46.0	184
No	67.0	41.0	54.0	216
Traditional/Modern				
Traditional	68.0	71.0	69.7	279
Modern	32.0	28.5	30.3	121
Number of Siblings				
Brothers	(1.9)	(2.7)	(2.3)	223
Sisters	(1.8)	(2.8)	(2.3)	177
Living Arrangements				
Parents	85.0	87.0	86.0	344
Other	15.0	13.0	14.0	56
Father's Education				
None	3.0	8.0	5.5	22
1-5 years	7.0	30.0	18.5	74
6-10 years	61.5	50.0	55.7	223
11+ years	18.0	4.0	11.0	44
Unknown	10.5	8.0	9.2	37
Mother's Education				
None	4.0	22.0	13.0	52
1-5 years	11.0	33.5	22.2	89
6-10 years	66.5	36.5	51.5	206
11+ years	11.0	4.5	7.8	31
Unknown	7.5	3.5	5.5	22
Total number of respondents	200	200	400	400

Figures in brackets denote the average number of siblings.

Table 1 shows selected characteristics of the respondents by urban and rural residence. The sample was purposively designed to include 200 males and 200 females, and all of the respondents were Sinhalese. About half were in ages 16-19 and the other half in ages 20-24. Almost all were Buddhist and most (86



per cent) were currently living with their parents. Most of the respondents (89 per cent) were unmarried at the time of the survey. On average, rural respondents had nearly three siblings, while those in urban areas had almost two siblings. Slightly more than 90 per cent considered themselves to be highly religious.

Nearly half of the respondents reported to have been a member of an organisation in their communities. Proportionately more respondents in the urban areas held such a membership than their rural counterparts. Nearly one third considered themselves to be "modern." Interestingly, this self-judgement of modernity did not appear to vary between urban and rural respondents.

Approximately one-third of the sample had 11 or more years of education, and 58 per cent had 6-10 years of education. The majority of the parents of the respondents also had 6-10 years of education, but only 11 per cent of the parents had more than 10 years of education. It was important to note from this survey that although more of these young adults were receiving higher education than their parents, most knew very little about even the rudimentary facts of human sexuality.

### **Findings**

The survey was designed to assess four major areas of reproductive knowledge and attitudes : menarche (and menstruation), virginity (female), masturbation (male) and family formation (including family size and family planning).

### ***Menarche***

The onset of menarche marks the beginning of a new stage in the life cycle of a woman. Different cultures have different beliefs and taboos regarding menarche. In more traditional societies, it is often observed with elaborate rituals that may involve not only the immediate family but other clans of the family as well. Despite the variations in beliefs and customs that prevail in different societies, the basic understanding of the onset of menarche is almost the same across cultures. It denotes the beginning of adulthood in a woman and is also the marker of her fecundity.

In Sri Lanka, menarche is often referred to as the day when a girl "grows up." The onset of menarche and several days following are associated with a host of customs and celebrations. Moreover, a certain set of taboos are observed.

Table 2 indicates that the mean age of menarche for girls was 14 years, the range being from 12-16 years. There was no significant difference between rural and urban samples. Only 66 per cent of the girls interviewed had been aware of the existence of such a phenomenon before it occurred. It came as a surprise or a shock, then, to 34 per cent with little difference between urban and rural respondents. Even though a majority reported as having had some idea of what to expect, 66 per cent said they were frightened when the event occurred.

TABLE 2

**Menarche: Age at onset, pre-onset knowledge, source of knowledge ceremony performed and food avoided, by residence**

	Urban (%)	Rural (%)	Both (%)
Age at Onset (years)	(13.7)	(14.4)	(14.1)
Pre-onset Knowledge			
Yes	67.0	62.0	64.5
No	33.0	38.0	35.5
Total	100.0	100.0	100.0
Source of Knowledge			
Friends	41.8	41.9	41.8
Mother	40.2	30.6	35.8
Sister	7.5	11.3	9.3
Relatives	6.0	11.3	8.5
Teacher	3.0	4.9	3.2
Other	1.5	0.0	0.8
Total	100.0	100.0	100.0
Ceremony Performed			
Yes	97.0	90.0	93.5
No	3.0	10.0	6.5
Total	100.0	100.0	100.0
Type of food avoided			
Oily only	74.4	58.0	66.7
Meat, fish, eggs only	2.2	1.2	1.8
Oily and meat, fish, eggs	16.7	19.8	18.1
Oily and sour only	3.3	11.1	7.0
Meat, fish, eggs, oily and sour	2.2	6.2	4.1
Other	1.1	3.7	2.3
Total	100.0	100.0	100.0

The figures in brackets denote the average completed age

Table 2 also shows that one-third of the respondents knew about menarche from their mothers and more than 40 per cent of them knew about it through friends. More than 90 per cent observed ceremonies associated with the onset of menarche. Interestingly, a higher proportion of the respondents in urban areas than in rural areas held ceremonies, although in both sectors the percentage of girls who observed ceremonies was extremely high (97 per cent in urban areas and 90 per cent in rural areas). In the majority of cases (60 per cent),

the first person notified was the girl's mother; 17 per cent first informed an elder sister, while a few informed a relative or close friend.

### *Isolation*

A very common custom practised in Sri Lanka when a girl reaches menarche is either to totally or partially isolate the young girl in a room for varying periods of time, depending on the astrological interpretations of the girl's horoscope. In most families, the moment the mother or an elder is made aware that the girl has "grown up," a family member is sent with the girl's horoscope to an astrologer, who then gives the necessary instructions as to how long she should be isolated and the date and time she should take her first bath. These customs prevail in the majority of Sri Lankan homes, irrespective of the educational level of the girl's parents.

The girl is usually not allowed to see or speak to a male for the first few days following the onset of menarche. About 60 per cent of the respondents were isolated from males only, and an additional one-third of the girls were isolated from all family members except the mother. Although isolation for 6-7 days appeared to be the norm, more than half of the girls were isolated for more than one week.

In most Sinhala homes, the girl is given a bath at the end of the isolation period at an auspicious time recommended by the astrologer. Many customs are associated with this "bathing ceremony" at the end of which the girl is "brought out" dressed in new clothes and adorned with gold jewelry presented to her by parents and close family members. The first bath is celebrated by urban and rural families alike. These celebrations range from quiet family gatherings to large gala receptions. Even though one would expect that urban mothers would do away with such customs, this survey revealed that the celebrations were more prevalent in the urban communities. Approximately 25 per cent reported having elaborate parties for friends and relatives, while 70 per cent said their parents marked the milestone less ostentatiously. Only about 5 per cent said the event was celebrated by observing only the traditional (i.e. quiet) customs among family members.

It appears, then, that the celebration of menarche is more important to the parents than a physiological explanation to their daughter of what it actually is and what she can expect in the coming months.

### *Diet*

During the isolation period, or until the first menstrual period persists, many girls are not given their usual diet because it is believed that certain types of food are harmful to their health. In this study, nearly two-thirds of the respondents said that they were given four special diets during the isolation period (Table 2). When the respondents were probed about the type of diet given, it was found that only 11 per cent were free to eat anything of their choice. Although one would expect these various food taboos to be more prevalent in

a rural society, as many urban respondents reported having special diets during menarche.

Two-thirds (67 per cent) of all the girls surveyed reported that their elders advised them against eating certain types of foods because of potential harm to the body. The majority of these girls who were advised of this taboo (61 per cent) refrained from eating "oily foods" (food fried in oil), while others avoided meat, fish, eggs and "sour foods" such as pickles. Again, this was true of urban as well as rural residents.

It is alarming that only about 12 per cent of the girls were given a normal diet. Approximately 70 per cent were given a diet devoid of any type of protein and of very poor nutritional quality. It is at precisely this time that a girl should be given a nutritious diet, particularly a diet rich in proteins, vitamins and iron, but even the more educated families pay attention to these food taboos than to common sense. It is shocking, for instance, that 19 per cent of the girls were not given any solids until their first bath. Instead, they were fed *Miris Hodi* three times a day. (*Miris Hodi* is a thin, soup-like preparation made out of tamarind, black pepper, garlic, curry leaves and coriander boiled in water. This preparation is also traditionally given to mothers for the first few days after childbirth as the sole diet.)

### ***Menstruation***

Many young girls are aware that they menstruate every month, but do not have a clue as to the physiology of menstruation and the normal body changes that occur during the menstrual cycle. For example, it is common for younger girls in the first few years following menarche to experience irregular menses or periods once in three or four months. In this survey, the percentage of girls reporting irregular periods was much higher in the 16-19 age group than in the 20-24 age group (12 per cent and 3 per cent respectively).

As with the onset of menarche, menstruation is accompanied by various customs and taboos that have been handed down from generation to generation without much question as to their credence. Two such customs involve bathing and recreational and religious activities.

### ***Bathing***

Most women in Sri Lanka do not take head baths or wet their hair during the time they are menstruating for fear of various ill effects. This belief has been handed down from mother to daughter for countless generations and is still observed faithfully throughout the country. This survey indicated that 92.5 per cent of the sample had been advised not to bathe during their menses, and 62 per cent had carried out these instructions.

The reasons given as to why it was thought bad to take a head bath during menstruation were classified into four broad categories:

1. ***Mental Disturbances (46 per cent):*** These girls believed that bathing would in some way affect the mind, causing various disturbances ranging from anxiety attacks to manic states of lunacy. Some believed that wetting the head caus-

ed menstrual blood to rush to the brain, resulting in insanity. Others thought bathing would create a blood clot in the womb and release toxic substances into the blood stream.

2. *General Medical Problems (28 per cent)*: Various pathological conditions were also attributed to bathing during menses. The most common were headaches, abdominal pain and fever. Other conditions mentioned included tumours of the abdomen, womb-related complaints, cancer, swelling of the bow'y and even goitre.

3. *Menstrual Disturbances (15 per cent)*: The gamut of menstrual problems were mentioned, ranging from amenorrhoea (absence of menses) to menorrhagia (heavy menses), and including dysmenorrhoea (painful menses) and irregular menses. Here, too, respondents believed bathing caused blood clots in the womb, which, in turn, caused menstrual problems.

4. *No Reason (12 per cent)*: Some girls were unaware of any definite reason for avoiding a bath, but carried out instructions given to them by their elders anyway.

Many people believe menstruation to be a monthly cleansing of the body; in fact, the Sinhalese term for menstruation literally means "monthly cleansing." There is a fear, then, that if the blood flow is decreased or fails to occur one month, impure blood will collect in the womb and poison the body. Even though this belief is more prevalent among less educated girls, about one half of the sample who had studied beyond the ninth grade shared this view.

### *Activities*

Moderate exercise is perfectly harmless during menstruation, and in fact has been found to reduce menstrual cramps in many girls. However, 44 per cent of the girls abstained from any form of exercise because of the fear that it is harmful to the body. Moreover, a large percentage (79 per cent) were advised not to go to the temple or participate in any religious activity while menstruating. It is a popular belief that because women are "unclean" (or, in the process of being cleansed) during menstruation, they must therefore stay away from places of worship.

### *Virginity*

In Sri Lanka, virginity is held in high esteem and is of paramount importance at the time of a girl's marriage. The majority of marriages are still arranged by parents and there are numerous customs and rituals connected with establishing the fact that the bride is still a virgin. The presence or absence of the necessary "evidence" can often make or break a marriage. Unfortunately, these unscientific "virginity tests" that have been handed down from generation to generation without modification are still widely accepted as the yardstick of chastity.

A virgin is a girl who has never had sexual intercourse, and not necessarily a girl who bleeds at first intercourse. Many girls who are virgins do not bleed

at first intercourse. In Sri Lanka, however, tradition demands a display of blood on the bed-sheets as evidence of virginity. Failure to supply such "evidence" often results in the bride being chided by her husband and in-laws for having indulged in pre-marital sex, and in continued harassment for the rest of her married life.

During the past 10 years, the FPA has had to counsel many distraught brides who "failed" the virginity test, and has had to educate husbands and in-laws on the structure and function of the hymen so that they understand that a girl can be a pure virgin and still not bleed on her wedding night.

TABLE 3

**Knowledge about the hymen and knowledge/attitude towards virginity by age, sex, residence and education**

	Age group (years)		Sex		Residence		Education		All
	16-19	20-24	Male	Female	Urban	Rural	Upto Grade Grade 10+ 9		
A Knowledge about hymen									
1 Heard of the hymen? (%) saying yes	82.7	86.9	86.5	83.0	87.0	82.5	66.7	91.7	34.8
2. What is the hymen? (% giving correct answer)	36.6	48.5	42.5	42.5	41.0	44.0	23.4	49.8	42.5
3 Can a girl damage her hymen if she has sex before she “grows up.” ? (% saying “yes”)	51.5	54.6	63.0	43.0	53.0	53.0	48.7	54.7	53.0
B Knowledge/attitude about virginity (% giving correct answer to the question)									
1 Who is a virgin?	61.9	68.2	61.5	68.5	73.5	56.5	42.3	73.7	65.0
2 Do all women bleed at first inter-course?	26.7	40.4	22.5	44.5	36.5	30.5	16.2	40.1	33.5
3 Is absence of bleeding a sign that a woman is not virgin?	31.2	45.5	26.0	50.5	45.5	31.0	17.1	46.4	39.1
4. Is it true that girls who play games and exercise may not bleed at first intercourse?	30.7	41.9	37.5	35.0	37.0	35.5	33.5	38.3	36.3

As shown in Table 3, 85 per cent of the girls and boys interviewed had heard of the hymen, but only 43 per cent were actually aware of what it was. Interestingly, as many boys as girls knew what the hymen was. Among those who had studied up to grade 9, the proportion who had knowledge about the hymen was below 25 per cent; the proportion rose to 50 per cent among those with a higher education.

There is a prevailing myth in Sri Lanka that a girl cannot damage her hymen

if she has sex before menarche. People falsely believe that the hymen is a structure which develops after the onset of menarche. It is quite evident that this myth is widespread in the country, for even in this sample, approximately half the respondents shared this view. A somewhat surprising fact was that more boys than girls (63 per cent vs. 43 per cent) knew that the hymen could be damaged before a girl "grows up."

A majority (64 per cent) of the sample supported the idea of the "virgipity test." There was no significant difference between the responses given by girls and boys. It should be noted, however, that a significantly higher percentage of those who had not gone beyond grade 9 (79 per cent) thought it was important for a girl to have to prove her virginity than those with a higher education (58 per cent). Although the latter percentage is high, the level of educational attainment appears to be an important factor in the approval of virginity tests.

Table 3 also presents data on knowledge about virginity among the respondents. About two-thirds of the sample gave the correct answer to the question, "Who is a virgin?" A significantly higher proportion (nearly three-fourths) of the urban and more educated youth supplied the correct answer than their rural (57 per cent) and less educated (42 per cent) counterparts. It is striking to note that only one-third of the sample knew that all women do not bleed at the first intercourse.

Only 38 per cent of the sample gave the correct answer to the question, "Is the absence of bleeding a sign that a woman is not a virgin?" A significantly greater proportion of respondents who lived in urban communities, had 10 or more years of education, and were between the ages of 20-24 gave the correct answer than the rural, less educated respondents aged 16-19. Also a considerably larger proportion of female respondents gave the correct answer than their male counterparts.

### *Ceremonies*

The majority of the young people were aware of ceremonies, tests and rituals that take place in their families at the time of weddings, though some were not sure about the details or significance of what was done. Most of the respondents witnessed ceremonies being performed and traditional customs being observed at home-coming functions. According to those interviewed, the bride traditionally is brought to the groom's house and, upon arrival, the bride's mother and mother-in-law inspect the white bed-sheets the couple brought back from the honeymoon. According to the replies given, some such "inspections" were carried out the morning after the wedding, while others were done a few days later. Once satisfied that the bride has passed the test of virginity, the mother-in-law in some instances greets her with red flowers indicating her happiness.

### *Male Attitudes*

It has been the experience of the Medical Officers at the FPA that the majority of the young men who visit or write in to the Medical Division have very little knowledge of their basic reproductive anatomy and physiology. This ig-

norance usually leads to the development of fears and phobias about natural occurrences, such as nocturnal emissions and masturbation. These fears and phobias can have long-term mental and physical effects.

### *Nocturnal Emission*

Judging by the numbers seeking help and advice from the FPA clinic, nocturnal emission (ejaculation during sleep) is a subject that has caused a considerable amount of anxiety among young men. Several questions on this topic were posed to the male respondents of this survey to ascertain their knowledge about this physiological occurrence and to study the myths and fears surrounding this subject.

Of the male respondents interviewed, 77 per cent reported having experienced nocturnal emissions at some time. Of those who had never had one, 31 per cent were from the urban communities and 16 per cent were from the rural communities. (There does not seem to be any apparent reason for this residential discrepancy.) One-third of all the males were of the opinion that nocturnal emissions were in some way harmful to the body, and only 23 per cent each believed it weakened the body or led to weight loss.

It is clear from Table 4 that the myths about nocturnal emissions are more prevalent in rural areas and among those who have not studied beyond grade 9. Only 21 per cent of the boys with a higher education believed that nocturnal emissions were harmful to the body. A third of the respondents also believed that this natural phenomenon weakened the body or led to weight loss.

### *Masturbation*

Masturbation seems to be another subject that concerns and worries many young men. The majority of those clients who report to the FPA's counselling centre for various sexual problems, such as impotence or premature ejaculation, attribute their condition to masturbation during their younger days. These men seem to suffer from an acute guilt complex about something that is perfectly normal and prevalent among males.

The survey revealed that 95 per cent of the boys interviewed were aware of what masturbation meant, even though only 77 per cent reported having masturbated at some time in the past. Table 4 reveals the lack of knowledge about masturbation among young Sri Lankan men. It is not surprising, then, that they develop various psychological problems later in life as these fears become embedded. Although these beliefs and fears were strongest among rural and less educated men, about one-third of the urban and more educated males still believed the myths pertaining to masturbation and felt the practice in some way would be detrimental to them later in life.

### *Family Formation*

It is generally known that as a society modernises, the patterns of family formation are likely to undergo changes. Such changes are taking place now



TABLE 4

Beliefs about nocturnal emission and masturbation, by residence and education

	Residence			Education		
	Urban	Rural	Both	Upto Grade 9	Grade 10+	Both
	%	%	%	%	%	%
<b>A. Beliefs about nocturnal emission</b>						
1 Harmful to the body	31.9	35.5	33.7	63.2	20.8	42.1
2 Weakens the body	28.7	41.3	34.9	63.2	22.5	42.9
3. Leads to progressive loss of weight	28.7	38.0	33.3	56.1	23.3	39.7
<b>B. Beliefs about masturbation</b>						
1. Harmful to the body	31.2	58.1	44.4	64.9	35.6	50.3
2. Makes one thin	37.5	55.9	46.6	71.9	35.6	53.8
3. Weakens the body	39.6	55.9	46.6	75.4	35.6	55.5
4 Causes mental deterioration	36.5	40.9	38.6	56.1	31.1	43.6
5 Causes impotence later in life	29.2	30.1	29.6	49.1	21.1	35.1
6 Leads to poor sex later in life	25.0	28.0	26.5	38.6	21.2	29.9

in Sri Lanka. Marriage age, which has a significant influence on family formation, has been rising and the preference for smaller family size is steadily becoming a norm in contemporary Sri Lanka.

What the future patterns of family formation are likely to be and how they might be influenced are of critical importance to policy makers as well as in the development of programmes aimed at meeting the challenges of sex education. It is only when the perceptions and attitudes of today's youth are known that future trends can be accurately assessed.

The term "family formation" was used in this survey to denote the respondents' attitudes towards three dimensions: age at marriage, decisions regarding marriage and post-nuptial living arrangements, and family size and family planning.

### *Marriage Age*

Table 5 shows the preferred age at marriage and desired number of children among the respondents. The average preferred marriage age was relatively high: nearly 23 years for girls and 26 for boys. There was no significant difference in the responses of rural and urban communities. It is significant that the females in both the rural and urban sectors preferred a higher marriage age for both sexes than did the males. This pattern suggests that one of the main sources of the trend towards later marriage ages may be the changing attitudes of women.

TABLE 5

Preferred average age at marriage and preferred average number of children by respondents' sex and residence

	Urban		Rural		Both	
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)
Preferred age at marriage for						
Male	25.7	26.9	25.5	26.1	25.6	26.5
Female	22.4	23.0	21.5	23.0	22.0	23.0
Preferred number of children	2.3	2.3	2.6	2.6	2.4	2.4

### *Marriage Decisions*

The majority of youth surveyed reported that they wanted the decision regarding their marriage to be a joint decision between them and their parents. However, the preferences varied considerably between males and females. A significantly greater proportion of females preferred to have a joint decision with their parents, while considerably more males wanted to make the decision by themselves (i.e. without consulting the parents). Overall, less than 25 per cent of the youth preferred to have their parents make a unilateral decision regarding their marriage.

The majority also preferred to live separately from their parents after marriage: only about 25 per cent said they wished to stay with their parents. Interestingly, considerably more females than males said they wanted to live away from their parents.

### *Family Size*

The urban youth preferred to have, on average, 2.3 children, while rural respondents preferred, on average, 2.6 children. Males and females both stated an average family size preference of 2.4 children. Regardless of residence or sex, it is apparent that the desired family size among Sri Lankan youth is below three.

### *Family Planning*

An overwhelming majority of the sample disapproved of pre-marital sex. On the other hand, more than 90 per cent approved of practising family planning within the context of marriage (and rural youth actually reported a higher approval of family planning than urban youth). Given then, that these young adults give their approval to family planning but not to pre-marital sex, these findings do not support the contention of critics of family planning that the availability of contraceptives leads to sexual promiscuity.

That most of the youth knew of family planning indicates that efforts to publicise the availability of contraceptives have been effective. Their knowledge of temporary family planning methods and the sources of that knowledge are given in Table 6. Altogether, about 10 per cent did not know of any family planning methods. Males and females differed in how much they knew about temporary methods: generally, more males knew about more methods. Slightly more than 15 per cent of all females reported having no knowledge of any temporary family planning methods; that figure was only 7 per cent for males. Moreover, 80 per cent of the males had knowledge of two or more methods, as compared to 67 per cent of the females.

TABLE 6

Knowledge about temporary methods of family planning and source of knowledge by respondents' residence and sex

	Urban		Rural		Both		N
	Male (%)	Female (%)	Male (%)	Female (%)	Male (%)	Female (%)	
Knowledge about Temporary methods:							
None	0.0	19.0	6.2	11.1	6.6	15.1	43
One method	17.0	26.0	10.2	9.1	13.6	17.6	62
Two methods	42.0	29.0	41.8	35.4	41.9	32.2	147
Three or more methods	34.0	26.0	41.8	44.4	37.9	35.2	145
Source of knowledge:							
Mass media and literature	68.8	67.0	57.5	46.2	63.2	56.6	220
Parents/Friends	27.9	13.6	34.0	21.5	31.0	17.6	90
Doctor & Clinic	2.2	8.0	1.1	2.2	1.7	5.1	12
Lectures & Others	1.1	11.4	7.4	30.1	4.3	20.8	46

The mass media and literature were the most popular sources of family planning knowledge (nearly 60 per cent). Parents and friends were the next most important source, particularly for males (31 per cent vs. 18 per cent for females). More than 20 per cent of the females said lectures and other items were their source of family planning knowledge.

### Conclusion

More than one in five people in the world today are between the ages of 10 and 19. The United Nations, recognising the importance of this demographic phenomenon, declared 1985 as "International Youth Year." Among the challenges policy makers and education authorities face to ensure a safer and

healthier future for today's youth is teaching them the basic facts concerning reproductive health and human sexuality.

This survey revealed that in spite of the high level of literacy and improved systems of communication in Sri Lanka, many of the ancient myths, practices and taboos pertaining to human sexuality are still adhered to in both rural and urban sectors, by males and females and by the educated and less educated. The survey also revealed a dire need to introduce educational programmes in primary schools that focus on reproductive health and physiology and human sexuality.

The school is the ideal place to embark on a national sex education programme. Courses that explain the reproductive process and human sexuality can dispel myths and taboos that not only confuse youth but also lead to guilt and anxiety later in life. Such an educational programme can create a framework for a society to teach responsibility to its young people. Difficulties early in marriage, psychological problems of sexual inadequacy that are attributed to normal sexual activities, unnecessary harassment stemming from invalid "virginity tests" these and other problems related to knowledge of human sexuality can be alleviated through the introduction of reproductive health education programmes in schools.

The problems that have been discovered in the past few years regarding sexual activity among young adults will doubtless worsen unless action is taken soon to increase sexual awareness and knowledge among youth. Survey after survey reveals two phenomena that, taken together, are potentially dangerous if left untreated: the average age of marriage is rising and so is sexual activity among teenagers. Hence, there is an ever-increasing gap between the age teenagers begin experimenting with sex and the age at which they get married, leaving them with more time to experience the many problems that escort irresponsible sexual activity.

Sexually transmitted diseases, high rates of infant and maternal mortality, unwanted pregnancies, illegal and unsafe abortions, and low birth weight babies are just a handful of the numerous problems that await young people who enter pre-marital sex with a basic ignorance of human sexuality and physiology. Replacing myths and taboos with hard facts is a long, arduous chore indeed. This survey has revealed, however, that the young girls and boys of Sri Lanka are not only in need of such knowledge but are eager for it as well.

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## **APPENDIX**

### **Sampling and Interviews**

It was decided that males would be interviewed by male interviewers and women by female interviewers. An experienced group of six males and six females were selected to conduct the interviews. They were required to attend a special training programme at the FPA Training Centre.

At the conclusion of the training, a full discussion on the questionnaire was held with ample opportunity for the interviewers to clear any doubts or ask any questions.

Since the purpose of the survey was to collect sensitive information from young adults, all possible safeguards were taken to minimise parental objections. To facilitate this, a screening operation conducted by pairs of interviewers (one male and one female) was carried out in the selected areas. Each house in one of the four village clusters was visited and listed giving details of the head of household: name and address, other members of the household, time most convenient for the interview, etc.

A detailed map was prepared locating the houses listed so that the final enumeration process would be both efficient and convenient. The parents of the respondents were briefed about the purpose of this survey. This briefing, supported by an introductory letter from the Medical Director of the FPA, won the confidence of the parents. Out of 400 interviewed, there were fewer than five refusals.

# **INDIA'S POPULATION POLICY TARGET OF A NET REPRODUCTION RATE OF UNITY BY THE YEAR 2000/2001 A.D.\***

**DR. MAHINDER CHAUDHRY<sup>†</sup>**

## **Introduction**

Economic planners and policy makers in many less developed countries, especially those with heavy and constantly growing population pressures, cannot escape the struggle of setting and achieving the elusive goal of the net reproduction rate of unity (NRR = 1). There is little disagreement in their stated policy statements as to the desirability of the target, but the question of time frame remains a complex and absorbing issue for all concerned. A recent publication<sup>1</sup> by the Registrar General and Census Commissioner, India: *Population Projections for India, 1981-2001* hereafter referred to as *Projections 1984*, as a case study offers interesting insights into the disheartening art of making population projections for the less developed countries. The quality of the vital statistics available generates less than the desired level of confidence among researchers.

Including those made by international institutes and agencies, there is no dearth of official and unofficial estimates of population projections (both medium- and long-term) for India since the early 1950s. Many attempts at comparative analyses of various such projections have been made.<sup>2-7</sup> Some analysts have noted that the former set, i.e. the official projections reflect, in general, an optimistic picture of possible rapid demographic change, while others consistently underline the much slower pace of the expected change. One researcher<sup>4</sup> did not hesitate to characterise the Planning Commission's estimates as "...wishful thinking which has pervaded so much official work." The latest set of figures, in contrast to earlier estimates, appears to underscore the creeping harsh reality of unique demographic dynamics in a gradually developing economy such as India's.

In *Projections 1984* three projectories are traced over the next twenty years, taking 1980 as the base year. The expectation of life at birth for 1980 has been estimated for males at 54.1 years and for females at 54.7 years. The general fertility rate (GFR) has been estimated to be 164. Three different assumptions have been made with respect to the future fertility behaviour, while mortality is assumed to decline at a linear rate. The determinant of fertility behaviour will be the likely levels of married couples effectively protected by contraceptive methods.

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The 'High' projections assume that the present level of contraceptive use, i.e. 28 per cent of the married couples in the reproductive age group 15-44 for 1983-84, will remain the same till the year 2000 A.D. Over the next two decades, the estimated birth rate will decline only very marginally from 32.5 per thousand during 1981-86 to 31.0 during 1996-2001, and the death rate will decline from 12.2 per thousand to 8.9 during the same period. On the other hand, the 'Low' projections assume that the level of contraceptive use will double during this period, and 62 per cent of the married couples will adopt family planning practices by the turn of the century. Further, it is assumed that this target level of contraceptive use, along with the projected level of mortality, will allow the nation to achieve the goal of  $NRR = 1$  by the year 2000 A.D. To reach this goal, *Projections 1984* recommends that "the percentage of couples effectively protected should increase at the rate of 2 per cent per annum for the next 16 years."

There has been an impressive increase in the use of contraceptives in India, jumping from a very low level of 4 per cent in 1966-67 to 26 per cent in 1982-83. The number of total acceptors of family planning practices, including sterilisation, intrauterine devices (IUDs), and conventional contraceptives, will have to increase to over 30 million by the year 2000-01 from the present level of 11 million in 1981-82. The 'Medium' projections assume that the level of family planning practices will not reach more than half of the eligible couples (50.1 per cent) by the year 2000-01, requiring an annual increase in the level of contraceptive protection of 1.3 per cent. This assumed rate of expansion is quite consistent with the recent past trend of 1.30 per cent during 1971-76 and 1.36 per cent during 1976-84.

According to the 'Medium' series, the total population is projected to increase from 685 million (Census count on March 1, 1981) to 836 million in 1991 and further to 991 million by the year 2001 A.D. (Table 1 and Chart 1). Between 'Low' and 'High' projections there is a difference of nearly 94 million more people forecast to be living in India by the turn of the century. This future increase in population can be avoided, according to the basic assumptions of this exercise, if sufficient investment is made in family planning programmes to achieve the recommended target. If the allocations made for the family planning programme in the Sixth Five Year Plan, 1979-84, Rupees 975 million are any broad indication of the financial implications of this effort, then more than six billion Rupees (in current prices) will have to be invested in the public sector in the three subsequent Five Year Plans to meet the recommended target. The required total investment may be of an even higher order than indicated above if the per unit service cost of the family planning programme in the rural areas turns out to be higher than present estimates.

No matter what assumptions hold true -- high, medium or low -- the path of population increase during the 1980s is pretty well set, varying within a very narrow range of 833 and 843 million in 1991. The efforts made during the 1980s, that is the Seventh Plan 1985-90, to promote family planning practices will begin to produce meaningful results only during the 1990s and thereafter. In comparison to earlier projections made by the Expert Committee on Population

TABLE 1

Population of India and the rate of growth, 1901-1981 (census) and 1981-2001 (projections)

Year	Population (Million)	Decade	Decadal rate of growth (%)	Average annual exponential growth (%)	Absolute growth (Million)	
					Decadal	Annual
1901	238	—	—	—	—	—
1911	252	1901-11	5.75	0.56	14.0	0.14
1921	251	1911-21	(-)0.31	(-)0.03	(-) 1.0	(-)0.10
1931	279	1921-31	11.00	1.04	28.0	2.8
1941	319	1931-41	14.22	1.33	40.0	4.0
1951	361	1941-51	13.31	1.25	42.0	4.2
1961	439	1951-61	21.51	1.96	78.0	7.8
1971	548	1961-71	24.80	2.20	109.0	10.9
1981	685	1971-81	25.00	2.25	137.0	13.7
<b>Projections:</b>						
Low series						
1986	758	—	—	—	—	—
1991	833	1981-91	21.60	1.96	148.0	14.8
1996	901	—	—	—	—	—
2001	959	1991-01	15.13	1.41	126.0	12.6
Medium series						
1986	758	—	—	—	—	—
1991	836	1981-91	22.04	1.99	151.0	15.1
1996	915	—	—	—	—	—
2001	991	1991-01	18.66	1.70	155.0	15.5
High series						
1986	758	—	—	—	—	—
1991	843	1981-91	23.06	2.08	158.0	15.8
1996	942	—	—	—	—	—
2001	1,053	1991-01	24.91	2.22	210.0	21.0

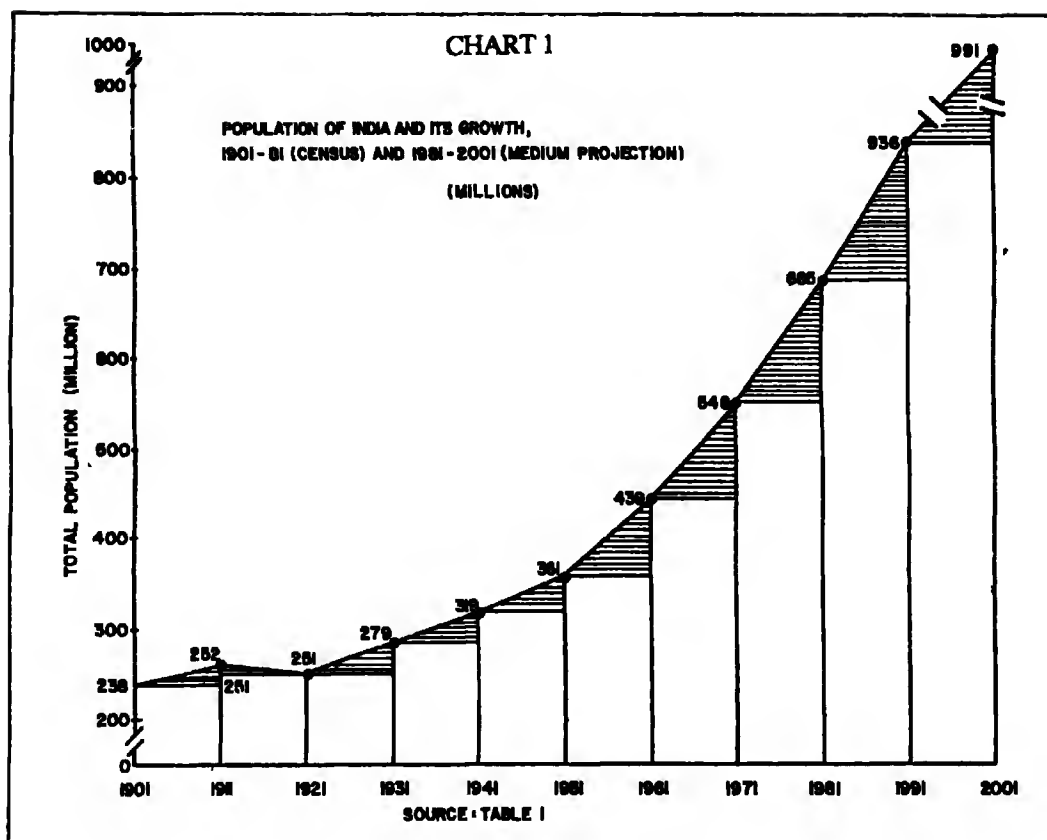
Source V S Verma, Registrar General & Census Commissioner, India, Population Projections for India, 1981-2001, New Delhi : March, 1984.

Projections (1978; based on the 1971 census results), there will be 58 million more people living in the country in the year 1991, if the 'Medium' series are considered. This difference in projected figures is attributed, in a large measure, to the relatively slower rate of fertility decline. The Expert Committee (1978) had projected the birth rate to reach 30 per thousand by the year 1983-84, and according to the present thinking it may now reach (hopefully) that level six years later, in 1989-90. It may be noted that the *1984 World Population Data Sheet* estimates the present (1984) birth rate to be 34 per thousand and projects a population of 1006 million for the year 2000 A.D.

### Mortality Behaviour

During the present century, the estimated death rate in India has registered a secular decline from a high peak of 47 per thousand population during 1911-21





to a low level of 15 during 1971-81. The first forty-year history of census-taking in India, 1881-1921, suggests a very wide fluctuation in mortality levels on account of epidemics and famines (Table 2 and Chart 2). For example, it is estimated that over 12 million people died in one year during the influenza epidemic of 1918.

In determining the 'best' available estimate of the level of mortality in the country, *Projections 1984* uses the Sample Registration System (SRS) data and the 1981 census findings. According to the 'census differencing method' the death rate for 1971-1981 is estimated to be 14.85 per thousand. And, according to the 'forward projection method', the authors of *Projections 1984* estimate a death rate of 14.39 per thousand for the same period if unsmoothed census data for the age group 0-4 are used. A slightly higher figure of 15.08 is estimated, if the smoothed census data for the above age group are used. Also, *Projections 1984* considers the recent findings of a study by Preston and Bennett.<sup>8</sup> The authors estimate the life expectancy at birth for India (excluding Assam State) during 1971-81 to be 52.5 years for males and 52.9 years for females, using the inter-census growth rate by age groups. Evaluating these different statistical evidences, *Projections 1984* estimates the life expectancy to be 54.1 years for males and 54.7 years for females for the base year of 1980. For projecting the mortality behaviour during the next two decades, the observed linear trend between 1956 and 1976 of an annual rise of one-half year in life expectancy at birth is assumed. *Projections 1984* estimates a level of life expectancy

TABLE 2

Life expectancy at birth and persons—male and female, India, 1881-1981 estimated and 1981-2001 projected

Period/year	Mid-point	Life Expectancy at Birth (years)			Average annual death rate (per thousand)
		Persons	Males	Females	
1881-1891	1886	25.0	24.59	25.54	41.3
1891-1901	1896	23.8	23.63	23.96	44.3
1901-1911	1906	22.9	22.59	23.31	42.6
1911-1921	1916	20.1	19.42	20.91	47.2
1921-1931	1926	26.8	26.91	26.66	36.3
1931-1941	1936	31.8	32.09	31.37	31.2
1941-1951	1946	33.5	32.55	31.66	29.2
1951-1961	1956	40.7	41.89	40.55	24.1
1961-1971	1966	45.5	46.37	44.65	18.6
1971-1981 a*	1976	50.5	50.90	50.00	—
1971-1981 b*	1976	51.2	51.20	51.20	15.0
1971-1981 c*	1976	52.7	52.50	52.90	—
1980	1980	54.4	54.10	54.70	—
Projections					
1981-1986	1983	55.9	55.6	56.2	12.2
1986-1991	1988	58.4	58.1	58.7	10.8
1991-1996	1993	60.9	60.6	61.2	9.6
1996-2001	1998	63.4	63.1	63.7	8.5
2001	2001	64.2	64.1	64.7	7.8

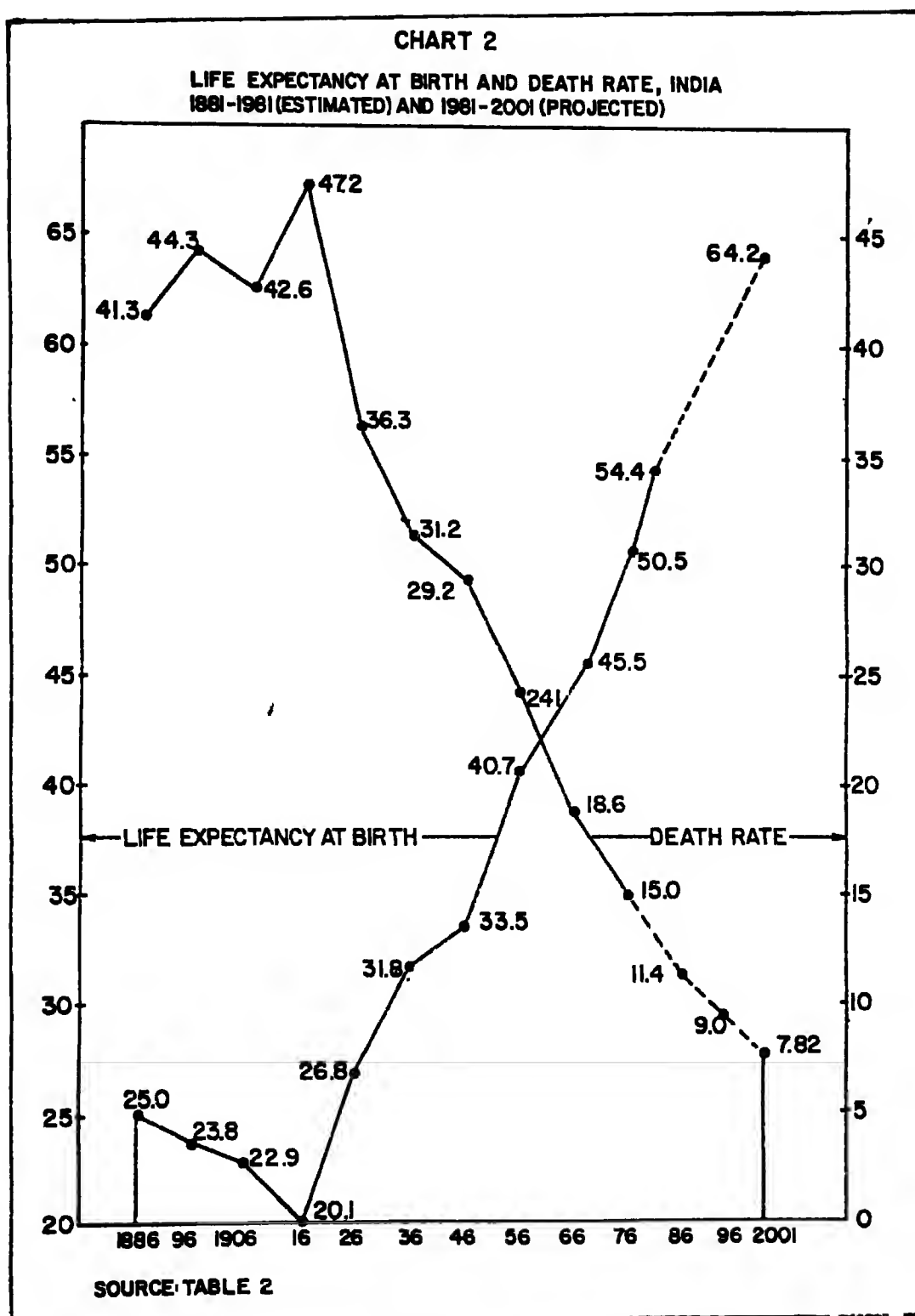
- \* Notes a Based on the Sample Registration Scheme age-specific death rates, 1971-80  
 b Based on Forward Survival Method, using South Asian Model Life Tables  
 c Based on inter-census growth rates by age-groups, see: S.H. Preston and N.G. Bennett, "A Census Based Method for Estimating Adult Mortality," *Population Studies*, Vol 37, No 1 (March, 1983) 91-104.

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at 64.1 years for males and 64.7 years for females in the year 2001 A.D.

The assembled mortality data for nearly 100 years for a developing economy offers an opportunity to examine how the theoretical models of mortality behaviour correspond with empirical evidence. Of course, we must keep in mind the relative quality of the available data. But better quality data are not easy



to come by in the area of vital statistics for such historical analyses for underdeveloped economies. A comparison of the mortality behaviour model as employed by the World Bank ' 1973 for preparing population projections for its member countries is made with the corresponding data for India (Table 3 and Chart 3).

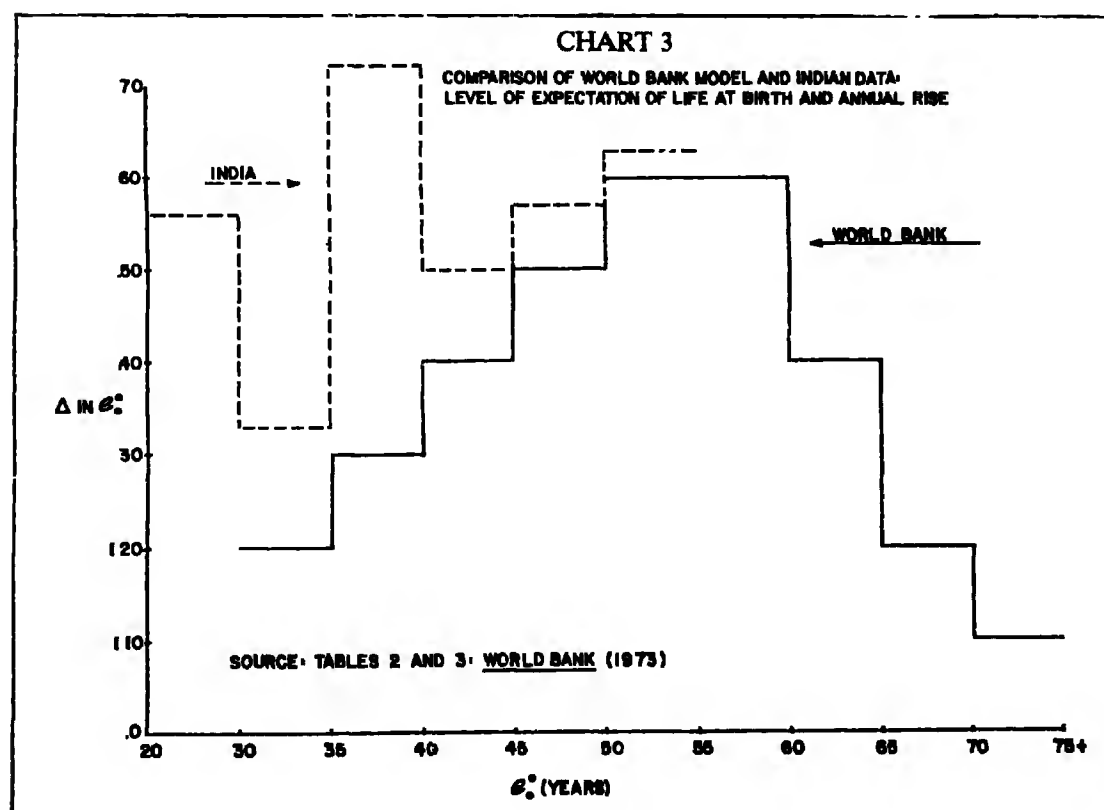
TABLE 3

World Bank model of mortality function compared with evidence from India, 1886-1982

World Bank model			India (1886-1982)	
Level of $e_0$ (in years)	Annual change (in years)	Level of $e_0$ & years <sup>a</sup>	Annual rate of rise in $e_0$ (in years)	No. of years required
—	—	25.00 (1886)–24.79 (1923)	—	—
—	—	24.79 (1923)–29.80 (1932)	0.56	9
30 to 34.9	0.2	29.80 (1932)–34.94 (1948)	0.32	16
35 to 39.9	0.3	34.94 (1948)–39.98 (1955)	0.72	7
40 to 44.9	0.4	39.98 (1955)–44.98 (1965)	0.50	10
45 to 49.9	0.5	44.98 (1965)–50.06 (1974)	0.57	9
50 to 54.9	0.6	50.06 (1974)–55.04 (1982)	0.63	8
55 to 59.9	0.6	—	—	—
60 to 64.9	0.4	—	—	—
65 to 69.9	0.2	—	—	—
70 and more	0.1	—	—	—

a Derived by interpolation.

Sources K.C. Zachariah and R. Cuca, Population Projections for Bank Member Countries, 1970-2000 (Washington, D.C.: World Bank, 1972). Table 2



The Bank model assumes that the rate of increase in life expectancy at birth is a function of its level. It is projected to rise by 0.2 years annually when the level of life expectancy is between 30 and 34.9 years, and further to rise by 0.3 years when the level is between 35 and 39.9 years, and so on (Table 3). The following may be noted:

(i) At levels of life expectancy below 30 years there may be many fluctuations on account of crop failures, floods, and epidemics. The estimated life expectancy in India declined decade after decade between 1881 and 1921. It took nearly 50 years to raise the life expectancy from 25 to 30 years, and it hovered around the lower end of the range for nearly 37 years. However, the theoretical model of the Bank does not explicitly consider this range of life expectancy.

(ii) In general, the empirical evidence supports the basic model when the level of life expectancy is in the range of 40 to 55 years. However, the observed annual increases are consistently of a higher order than those assumed by the Bank model (Chart 3).

### **Fertility Behaviour**

During a period of seven decades, 1906 to 1976, the birth rate, based on the census count, declined by 27.3 per cent (Table 4). With reference to the Sample Registration System and the 1981 Census results, *Projections 1984* estimates a birth rate of 34.5 for 1980. It is projected to decline by 33.3 per cent during the next two decades, reaching 23.0 per thousand under the 'Medium' assumption in the year 2001 A.D. In terms of General Fertility Rate, it is estimated to decline from 164 in 1980 to 98 in the year 2001 A.D. Nearly one-twelfth of this projected fertility decline is attributed to a declining trend in the proportion of married females to total female population in the age group 15-44 years. During the last two decades, 1961-81, the proportion of married females in this age group fell by 6.1 per cent. It is projected to further decline from 80.5 per cent in 1981 to 77.1 per cent in 1991 and to 73.6 per cent in the year 2001. As expected, there are significant regional variations in early marriage patterns. Among the 14 major states (excluding smaller territories), Kerala records the lowest proportion of married females in this age group (60.6 per cent) and Bihar the highest (88.6 per cent). In projecting the all-India figure, linear trends are traced over the last two decades for eleven states, and a second degree curve is fitted to two other states, Maharashtra and Tamil Nadu, and Kerala is assumed to reach the level of 60 per cent, already attained by Sri Lanka.

### **Mean Age at Marriage**

Although many attempts have been made during the last fifty years through social legislation to influence teenage marriage patterns in India, the meaningful change in the mean age at marriage for females has been noticed during the last two decades only. The Sarda Act of 1930, amended in 1949 and 1956, raised the minimum age at marriage for females from 14 to 15 and then to 16 years.

TABLE 4

Birth rate and Gross Fertility Rate, India 1901-1981 and 1981-2001 (projections)

Period	Mid-point	Birth rate (per thousand)	General fertility rate
1901-1911	(1906)	49.2	—
1911-1921	(1916)	48.1	—
1921-1931	(1926)	46.4	—
1931-1941	(1936)	45.2	—
1941-1951	(1946)	39.9	189
1951-1961	(1956)	41.7	201
1961-1971	(1966)	40.4	192
1971-1981	(1976)	37.2	—
1971-1976	1973-74	39.9	—
1976-1981	1978-79	34.6	—
	1980	34.5	164
<b>Projections</b>			
Low series			
1981-86		32.46	152
1986-91		29.42	133
1991-96		25.16	110
1996-01		20.78	88
Medium series			
1981-86		32.46	152
1986-91		30.45	138
1991-96		27.61	122
1996-01		24.42	106
High series			
1981-86		32.46	152
1986-91		32.30	147
1991-96		31.97	144
1996-01		31.06	141

Source V S Verma, Registrar General and Census Commissioner, India, Population Projections for India, 1981-2001 (New Delhi: March, 1984)

S.N. Agarwala, India's Population Problems, (New Delhi: Tata-McGraw-Hill, 1973)

From 1896 to 1956, the estimated rise in mean age at marriage is less than one-half year per decade, creeping from 12.8 to 15.4 years during sixty years of practically no socio-economic development in rural India. The recent Act of 1978 further raised the minimum age at marriage for females to 18 years and for males to 21 years. However, the implementation of this social legislation remains largely ineffective. During the last decade, the mean age at marriage for females is estimated to have increased from 17.2 years during 1971 to 18.3 years in 1981. A significant portion of this change is attributed to rapidly changing marriage patterns for females in the 15-19 years group. During the same period, 1971-81, the proportion of unmarried females for this age group

increased from 45 per cent to 57 per cent, with noticeable variation at the state levels: in Punjab and Kerala the unmarried proportion (86 per cent) is more than twice as high as it is in Rajasthan and Bihar (36 per cent).

As to the influence of rising age at marriage on the level of fertility in India, the opinions of demographers seem to vary. After surveying the available evidence, Cassen<sup>9</sup> concludes that "if such figures are representative, only a reduced share of total fertility can be contributed by these very early years of marriage and a correspondingly limited reduction of fertility is to be expected from small rises in the age at marriage." Agarwala,<sup>10</sup> on the other hand, estimated that "if the female age at marriage in India rose to 19 and if no women were allowed to have a child before age 20, the birth rate would decline by about 40 per cent within 25 years." Another study<sup>11</sup> estimated that a rise in female marriage age from 15 to 17 would produce an insignificant reduction in the birth rate, but a rise to 19 years would reduce the birth rate by 11 per cent, and a further rise to 21 years would result in a decline of 24 per cent, assuming unaltered age-specific marital fertility rates. A recent survey<sup>12</sup> by the Registrar General's Office reveals a significant drop in the total marital fertility rate (TMFR) when the age at marriage rises from less than 18 years to 21-23 years. In the rural areas the estimated TMFR declined by 7.9 per cent, and by 24.0 per cent in the urban areas during 1978. The above recent statistical findings lend support to the view that the fertility level would be strongly influenced negatively if the mean age at marriage rose beyond 20-21 years in the next two decades.

### Urbanisation

Nearly one-fourth of India's population lives in urban areas and over the last eighty years the urban proportion has more than doubled, rising from 10.8 per cent in 1901 to 23.3 per cent in 1981. There is growing evidence that urban fertility level is much lower than the corresponding rural levels. The *National Sample Survey, 1963-64* estimates that the total fertility rate (TFR) for the urban sample is 11 per cent lower. The SRS data for the 1970s consistently record a one-fourth to one-third lower TFR for the urban areas (26 per cent in 1972 and 33 per cent in 1978). The recent 1981 census data, based on a five per cent sample, amply support the earlier findings.<sup>13</sup> The estimated TFR in 1978 for urban areas is 14.2 per cent lower than the corresponding rural figure.

### Education

There is growing evidence in India to support the observed inverse relationship between the level of female education and the fertility level. When the 1978 survey data for females are classified by the level of education (illiterate and literate -- below primary; above primary but below matriculation; and above matriculation) separately for rural and urban residency, the estimated TMFR for the literate group is 16.5 per cent lower than the corresponding figure for the illiterate group in the urban sample. For the rural sample this fertility difference between the literate and illiterate groups is of smaller magnitude -- 10.5

per cent. At the post-matriculation level (beyond 10-12 years of schooling) a relatively sharp decline is observed for the urban sample.

During the present century, the level of female literacy has shown a remarkable jump from 0.69 per cent in 1901 to 24.82 per cent in 1981 (the term literate refers to those who can read and write with understanding, and children in the age group 0-4 years are excluded). But there are very significant differences in rural and urban levels of female literacy for the relevant age group, 15 and above, which have a direct bearing on the observed fertility level. According to the 1981 census, more than half (52 per cent) of the urban females in this age group and less than one-fifth (17.6 per cent) of the rural females were counted as literate. Therefore the prospects of rapid growth in the literacy level of rural females in this age group (15 and over) do not appear overly encouraging if we consider: (i) the rate of growth in the rural female literacy level during the last decade and (ii) the proportion of females in the age group 10-14 registered in rural schools. During 1971-81, the level of literacy among rural females increased by 36 per cent only. And, in 1981, only 29 per cent of girls in the age group 10-14 years in rural India were attending school. The corresponding proportion for urban females is more than double -- 66 per cent. Unless extraordinary financial allocations are made in the future Five Year Plans for rural female schooling, no startling declines in the rural teenage marriage patterns and rural birth rates can be expected in the years between now and the end of the century.

### **Selected Projections and $NRR = 1$**

Table 5 presents a comparison of the latest set of population projections for India for the medium term, 1981-2001, as prepared by the Registrar General,<sup>1</sup> the World Bank,<sup>14</sup> the United States Bureau of the Census,<sup>15</sup> the United Nations,<sup>16</sup> and R.H. Cassen.<sup>4</sup> Depending upon the bench-mark data and the underlying assumptions as to the fertility and mortality behaviour during the period under consideration, these figures reflect the professional judgement of their authors as to the likely level of population growth in India. As expected, the projections differ rather widely. It may be noted that there is a difference of 255 million between the highest projection for the census for the year 2000 A.D. of 1,142 million by the U.S. Bureau and the lowest estimate of 887 million by Cassen for the year 2001. And the 'Low' series, in all the five sets of figures, indicates that the population at the end of the century will range from 887 to 984 million.

The Working Group on Population Policy of the Planning Commission in its Final Report<sup>17</sup> concluded: "The Group strongly recommends that the nation commit itself to achieving the long-term goal of  $NRR$  of unity by the year 1996 on an average and by the year 2001 for all the States." In terms of family size this target means an average of 2.3 children per couple, and a death rate of about 9 per thousand and a birth rate of about 21 per thousand by 1996. *Projections 1984* (Low variant) accepts the long-term goal of reaching the  $NRR$  of unity by the year 2000 A.D., as set in the *Statement on National Health Policy*, issued by the Ministry of Health and Family Welfare and recently accepted by



TABLE 5

Selected population projections for India, 1980-1981 to 2000-2001 (Million)

Sources and assumptions	1971/ 1975/ 1976	1980/ 1981	1985/ 1986	1990/ 1991	2000/ 2001
1. Registrar General (1984)	1971	1981	1986	1991	2001
(a) High	548	685	758	843	1,053
(b) Medium	548	685	758	836	991
(c) Low	548	685	758	833	959
2. Expert Committee (1979)	1971	1981	1986	1991	
(i) Slow fertility decline	547	672	735	799	—
(ii) Medium fertility decline	547	671	729	778	—
(iii) Fast fertility decline	547	663	713	754	—
3. World Bank (July, 1979)	1975	1980	1985	1990	2000
NRR=1 by 2020 A.D	608	674	745	821	973
4. U.S. Bureau of the Census (Jan., 1979)	1975	1980	1985	1990	2000
(a) High series	618	694	786	894	1,142
(b) Medium series	618	690	764	844	1,021
(c) Low series	618	687	757	828	974
5. United Nations (August, 1979)	1975	1980	1985	1990	2000
(a) High variant	619	699	792	892	1,105
(b) Medium variant	619	694	776	862	1,039
(c) Low variant	619	690	765	840	984
6. R.H. Cassen (1978)	1976	1981	1986	1991	2001
(a) $F_2M_1$ (low fertility-mortality decline)	621	688	758	829	970
(b) $F_3M_2$ (Medium fertility and low mortality decline)	619	682	745	808	922
(c) $F_3M_1$ 5 (Medium-fast fertility & mortality decline)	618	678	736	792	887

the Planning Commission in its plans, *The Approach to the Seventh Five Year Plan, 1985-90*. Only the 'Low' series is based on this assumption, in addition to extending the period and reflecting a rather low probability of achieving this goal by the year 2001. Perhaps the 'Medium' series, as in the past, is considered the basis for formulating the Seventh Five Year Plan, 1985-1990. Therefore, it may not be far out to interpret *Projections 1984's* not too explicit assumption that the target of  $NRR=1$  is more likely to be attained somewhere around the year 2010. In contrast, the World Bank (1979) projections are very specific that  $NRR=1$  will be achieved by the year 2020 A.D. Although the projections of the U.S. Bureau of the Census are not explicitly stated in terms of  $NRR$ , none of the three series assumed the TFR of less than 3.0 for the year 2000. Similarly, the United Nations (1979) estimates of the fertility decline do not suggest the possibility of  $NRR=1$  in the first decade of the next century. Cassen ' remarks that....the condition of  $NRR=1$  is unlikely to be precisely met over

long periods." The final burden of the analysis is that the elusive goal of  $NRR = 1$  will be achieved in India during the latter part of the first decade of the next century when the total national population will have crossed the billion mark. This conclusion seems contrary to many repeated assertions that "India can anticipate a net reproduction rate of unity by the end of this century."<sup>17</sup>

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# **MATERNAL AGE AT DELIVERY AND ANTHROPOMETRIC MEASUREMENTS OF NEW-BORN BABIES**

**DR.P.B.GAI\***  
and  
**MS.RATNA KALAMDANI\*\***

## **Introduction**

Interest in studies on the body measurements of infants at birth is of recent origin. In India, the average birth weight as well as other measurements of infants are considerably low as compared to those observed in developed countries. The body measurements at birth act as an index of the child's health, and in turn, help predict the future growth of the infant.

The body measurements of infants at birth are the result of both genetic and environmental influences. Growth of infants at birth will not be uniform at all places and normal standards of anthropometric measurements of the new-born vary from one individual to another, from one family to another and from one place to another. Under such conditions, a study of the anthropometric measurements of new-born babies and the factors influencing these measurements will help in assessing the extent to which the different factors will have a favourable or unfavourable effect on body measurements of infants.

An important factor which affects the anthropometric measurements of infants at birth is maternal age at delivery. Very little work has been done on this aspect and that too, has been limited to the relationship between maternal age at delivery and birth weight only. Several workers<sup>1-4</sup> have reported that the birth weight of infants increases with maternal age upto 40 years and decreases thereafter. Selvin and Garfinkel<sup>5</sup> opine that young mothers show a tendency to have an increasing proportion of low birth weight infants. Mothers in the age group of 20-24 years have a greater number of low birth weight babies than mothers in the ages of 40-44 years. According to Idnani et al.<sup>6</sup> there is a high incidence of low height, weight, head and chest circumferences among babies born to mothers below 20 years and above 35 years of age. Perhaps Idnani's is the only study which takes into consideration a few anthropometric measurements along with birth weight.

Keeping in view the above facts an attempt was made to study the relationship between maternal age at delivery and a few anthropometric measurements of new-born babies.

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### Sample & Methodology

A sample of 300 new-born babies was drawn from five randomly selected hospitals of Dharwad town to study the relationship between maternal age at delivery and anthropometric measurements. Body measurements such as crown-heel length, weight, arm circumference, head circumference and chest circumference were taken within 48 hours of birth. The age of the mother was recorded from the case papers of the hospital and cross-checked by personally interviewing the mothers.

Standard statistical techniques consisting of correlation coefficients, coefficients of determination, and regression coefficients were used to study the relationship between maternal age at delivery and anthropometric measurements. Scatter diagrams were also used to see the form and closeness of the relationship between them.

The correlation coefficient ( $r$ ), the coefficient of determination ( $r^2$ ), and the regression coefficient ( $b$ ) for different anthropometric measurements according to the age of the mother are presented in Table 1.

TABLE 1

Correlation between maternal age and anthropometric measurements of new-born babies

Anthropometric Measurements	Correlation Coefficient 'r'	Coefficient of Determination 'r <sup>2</sup> '	Regression Coefficient 'b'
Length	0.159*	0.026	0.07
Weight	0.174*	0.029	0.01
Arm Circumference	0.172*	0.029	0.03
Chest Circumference	0.232*	0.053	0.10
Head Circumference	0.171*	0.029	0.06

Table value of 't' = 1.96 at 5 per cent level of significance for 298 degrees of freedom.

It is clear from the table that all the correlation coefficients were significant. The highest correlation was found in the case of chest circumference of the infant, and the least with the length of the infant. Other measurements like weight, and arm and head circumferences gave more or less similar results.

The coefficient of determination ( $r^2$ ) indicates the percentage variation in the anthropometric measurements that can be explained in terms of the age of the mother. This was higher in the case of chest circumference of the infant (0.05) than other birth measurements, indicating that only a 5 per cent change in chest circumference could be attributed to maternal age, the rest (95 per cent) being due to other factors.

The regression coefficients for the different anthropometric measurements (also presented in Table 1) were also significant. The regression coefficient was

highest in the case of chest circumference, indicating that as the age of the mother increases by one year, the change in the chest circumference of the infant is 0.1 cm. The weight of the infant was found to vary least with increasing maternal age.

Scatter diagrams (Figures 1 to 5) along with the fitted regression lines drawn for different anthropometric measurements with the age of the mother, showed a linear relationship between all the measurements on the one hand and maternal age on the other.

Longer birth lengths of infants were found to be associated with mothers between the age group of 20 to 30 years (Fig. 1). It is clear from Fig. 2 that the number of children having a birth weight of 2.5 kg was also high in this age group. The number of children having an arm circumference of 11 cm and above was high in case of mothers aged 20 to 25 years (Fig. 3). Maximum clustering was observed between mothers of age group 20 to 25 years and chest circumference of 30 to 33 cm (Fig. 4). Similarly, clustering was more when the head circumference of infants was 33 cm and mother's age was 20 to 25 years (Fig. 5).

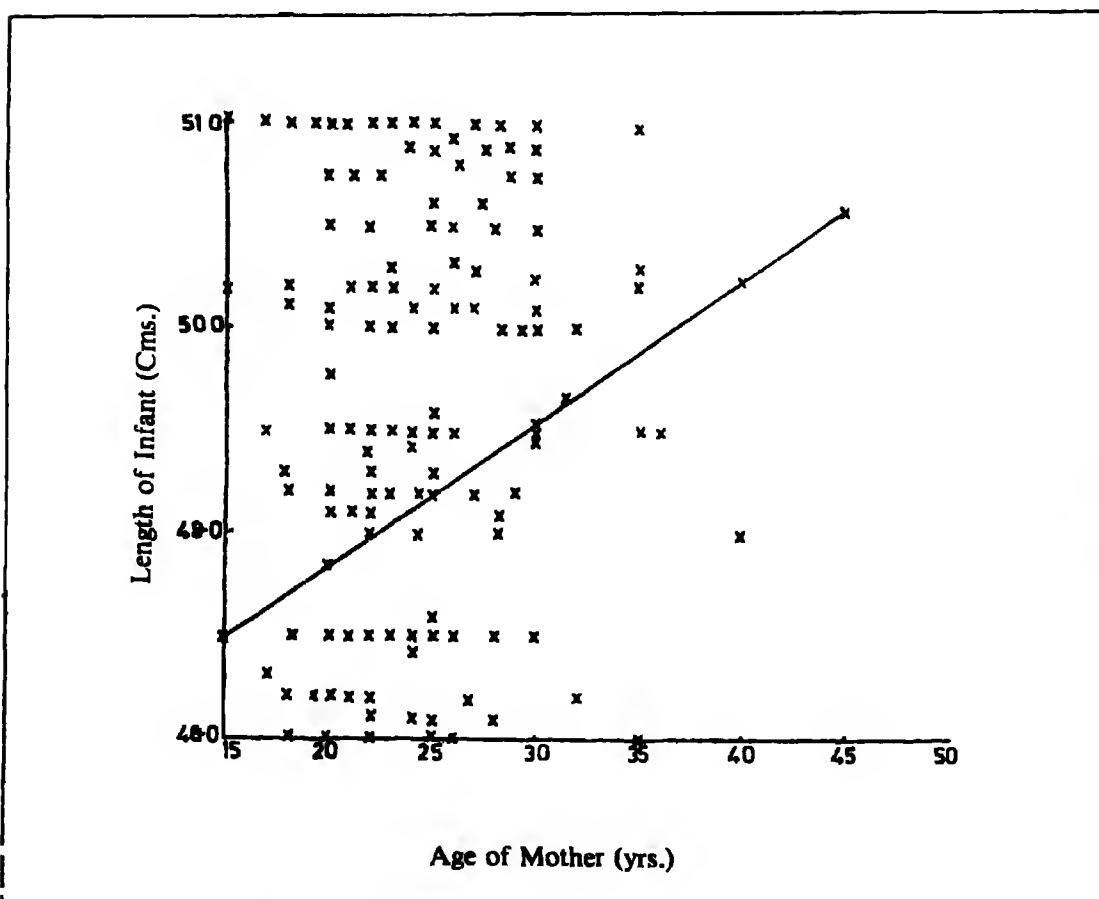


Fig. 1 Relationship between age of mother and length of infant



Fig 2 Relationship between age of mother and weight of infant

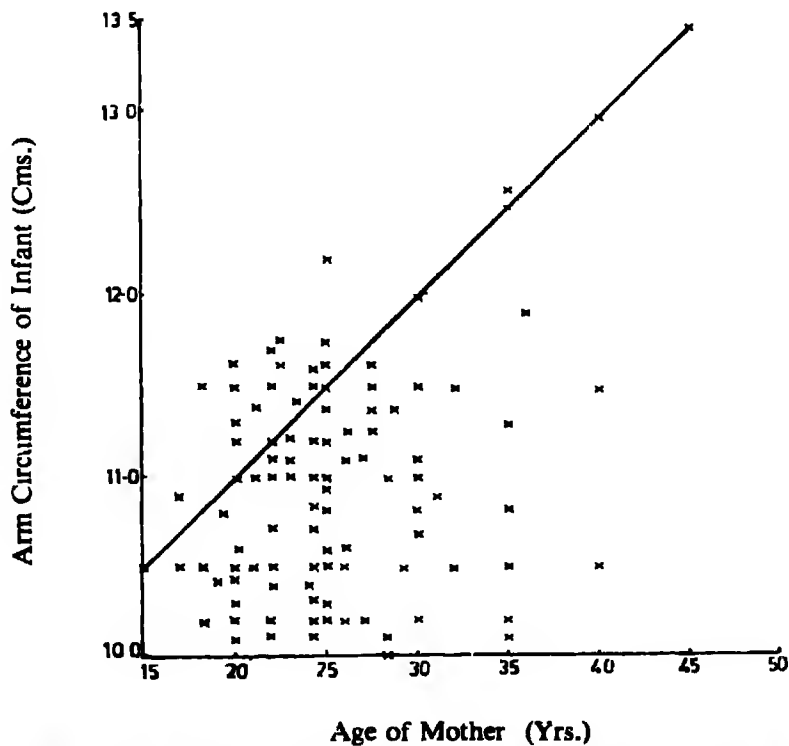


Fig. 3 Relationship between age of mother and arm circumference of infant

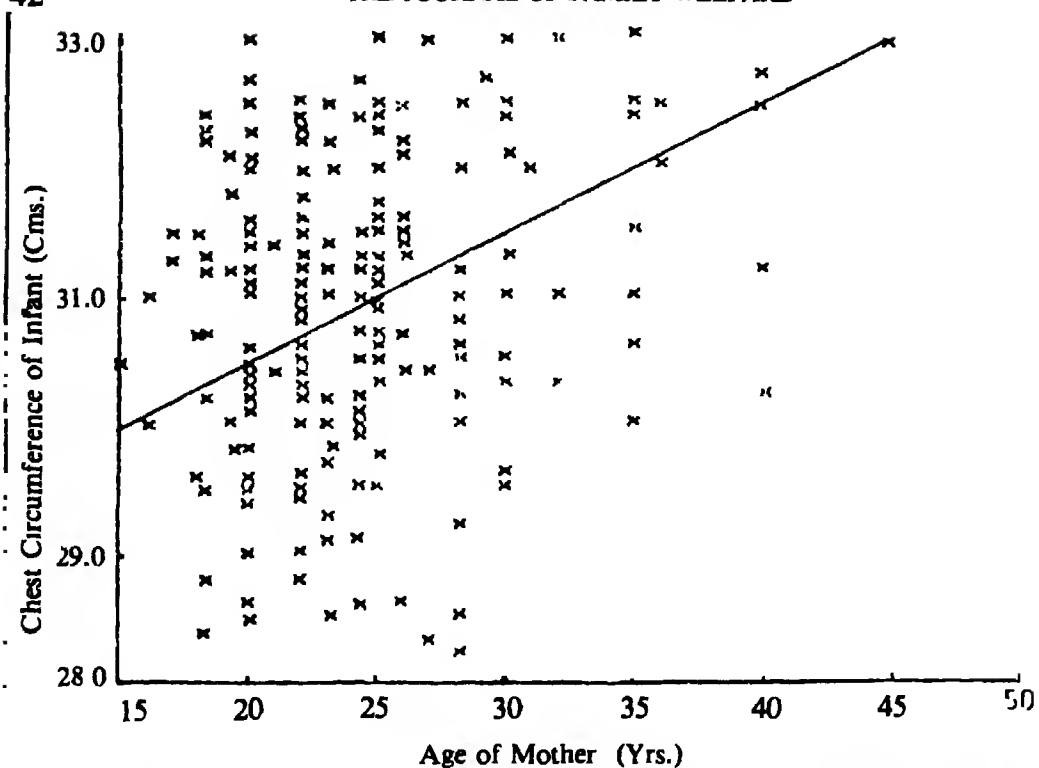


Fig 4 Relationship between age of mother and chest circumference of infant

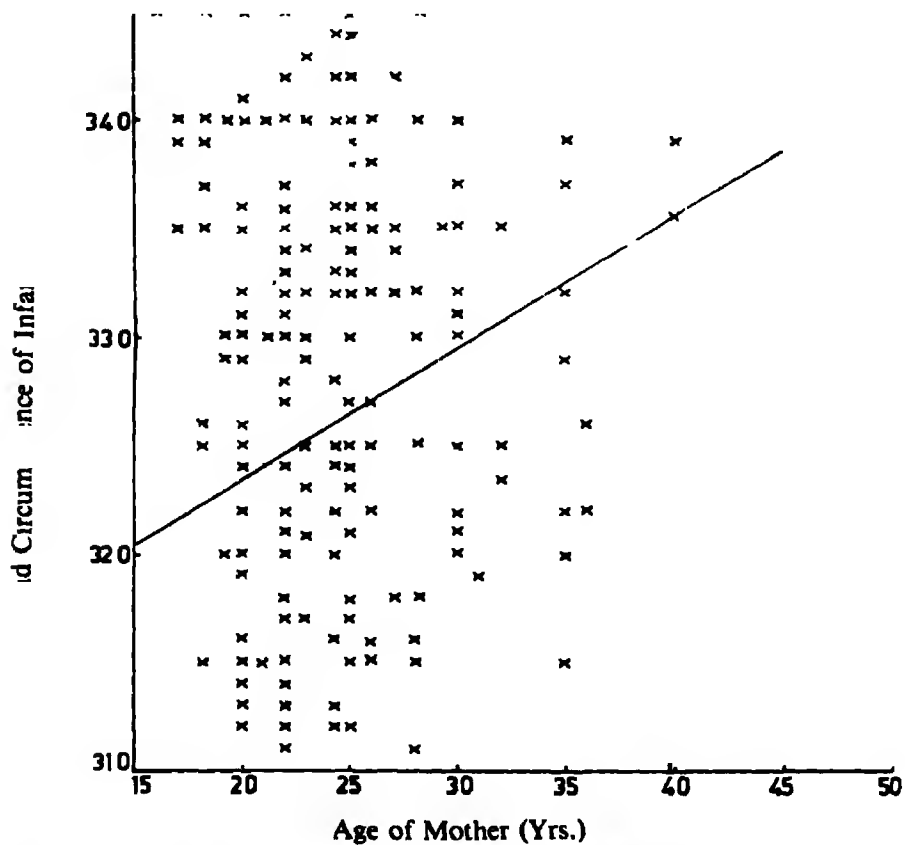


Fig. 5 Relationship between age of mother and head circumference of infant

## Conclusion

It is clear from our findings that correlation coefficients in respect of the age of the mother and the different anthropometric measurements studied were significant. Our results are in conformity with those of Idnani et al.<sup>6</sup> Further, among all the measurements, chest circumference of infants bore the maximum correlation with maternal age at delivery. Thus a positive correlation existed between the age of the mother and anthropometric measurements.

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# **HUSBAND-WIFE COMMUNICATION AND CONTRACEPTIVE BEHAVIOUR**

**MR.SIVA RAJU +**

## **Introduction**

Husband-wife communication is an important factor in the process of decision-making in regard to family size and the adoption of family planning practices. Sufficient evidence exists from studies conducted abroad<sup>1-6</sup> to substantiate dominance relations and segregation roles which may affect the decision of the husband and wife jointly, to practice family planning. Studies conducted in India<sup>7-10</sup> also indicate a significant positive association between husband-wife communication and the adoption of family planning. Generally, in rural India, the husband plays the key role in making family decisions. The dominance of the husband precludes the wife from taking an equal part in decision-making and consequently, the effective practice of contraception becomes a much more difficult task than when the decision to practice contraception is mutually agreed upon. Thus, the status difference between the husband and the wife, and the position of the husband as the prime decision maker in most rural areas can be viewed as a serious obstacle to the spread and adoption of the family planning programme in India.

## **Objectives**

With this in view, the present study was undertaken among family planning adopters and non-adopters belonging to two extreme regions in Andhra Pradesh State in India. Factors associated with husband-wife communication such as initiation of discussions on family planning, frequency of discussion, and decision-making were studied.

## **Sample**

Two extreme regions of Andhra Pradesh - Rayalaseema and coastal Andhra - were considered for the present study by virtue of significant variations in family planning performance in these regions. The socio-economic status as also the family planning adoption rate of the people in Rayalaseema are very low as compared to those in coastal Andhra.

Husbands whose wives were in the reproductive age group (15 - 44 years) including adopters having two or more children were considered as respondents. A multi-stage random sampling procedure was adopted for selection of the sample. First, one district from each region was selected by keeping in view its lowest

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performance in family planning during the last five years. As a next step, one Community Development Block from each of the two selected districts was considered, again keeping the above criterion of lowest family planning performance, and 300 respondents constituting 150 non-adopters and 150 adopters, were selected from each of the two blocks for data collection. Thus, a total of 600 respondents constituted the sample for the study. An elaborate schedule was used for data collection.

## **Results**

### *Discussion on Family Planning*

Husband-wife communication plays an important role in family planning. Mutual discussion on family planning helps improve the couple's knowledge about family planning, creates a favourable attitude towards the programme, and ultimately helps them to adopt contraception.

Nearly three-fourths (74 per cent) of the respondents stated that they had discussed the subject of family planning with their wives (Table 1). However, region-wise data revealed that more husbands from coastal Andhra (80 per cent) had done so as against those in Rayalaseema (68 per cent) thereby suggesting a relatively better status of women in the former region as against the latter. The association between husband-wife communication on family planning and contraceptive behaviour was significant (at 1 per cent level) only in coastal Andhra. Further, intra-spouse communication on family planning was greater among adopters than among non-adopters of contraception in both regions.

### *Initiator of the First Discussion on Family Planning*

The majority of the people, especially in rural areas, feel that family planning is a topic which should not be discussed with others. Further, even when it is discussed between spouses, the husband usually initiates the discussion. The wife seldom does so because of her low status in the family.

A little over two-fifths of the husbands were found to have initiated the discussion on family planning in the study population as a whole (Table 1). However, 37 per cent of the wives had initiated such a discussion with their husbands in coastal Andhra as against only 26 per cent in Rayalaseema, which clearly reveals the dominance of husbands and the low status of wives in the backward region of Rayalaseema. A significant association (at 1 per cent level) between the initiator of the first discussion on family planning and contraceptive behaviour of the respondents was noticed in coastal Andhra but not in Rayalaseema. In both the regions, initiation of the discussion by either spouse was relatively greater among adopters than among non-adopters.

### *Frequency of Joint Discussion*

It is presumed that the greater the opportunity to have joint discussions between the husband and wife, the greater will be the possibility of their accepting contraception. On this basis, frequency of joint discussion was classified as "rarely" and "occasionally". Respondents who discussed family planning

TABLE 1

Per cent distribution of respondents by region, husband-wife communication on family planning and contraceptive behaviour.

Husband-wife communication	Rayalaseema			Coastal Andhra			Total		
	N.A.*	A**	Total	N.A.	A.	Total	N.A.	A.	Total
	(n = 150)	(n = 150)	(n = 300)	(n = 150)	(n = 150)	(n = 300)	(n = 300)	(n = 300)	(n = 600)
<i>i) Discussion of FP</i>									
Never discussed	36.7 (55)	26.7 (40)	31.7 (95)	29.3 (44)	10.0 (15)	19.7 (59)	33.0 (99)	18.3 (55)	25.7 (154)
Discussed	63.3 (95)	73.3 (110)	68.3 (205)	70.7 (106)	90.0 (135)	80.3 (241)	67.0 (201)	81.7 (245)	74.3 (446)
<i>ii) Initiator of Discussion</i>									
Never discussed	36.7 (55)	26.7 (40)	31.7 (95)	29.3 (44)	10.0 (15)	19.7 (59)	33.0 (99)	18.3 (55)	25.7 (154)
Husband initiator	41.3 (62)	42.4 (64)	42.0 (126)	40.0 (60)	47.3 (71)	43.6 (151)	40.7 (122)	45.0 (135)	42.8 (257)
Wife initiator	22.0 (33)	30.7 (46)	26.3 (79)	30.7 (46)	42.7 (34)	36.7 (110)	26.3 (79)	36.7 (110)	31.5 (189)
<i>iii) Frequency of Husband-wife communication</i>									
Never discussed	36.7 (55)	26.7 (40)	31.7 (95)	29.3 (44)	10.0 (15)	19.7 (59)	33.0 (99)	18.3 (55)	25.7 (154)
Rarely	37.3 (56)	50.0 (75)	43.6 (131)	42.7 (64)	56.7 (85)	49.6 (149)	40.0 (120)	53.4 (160)	46.6 (280)
Occasionally	26.0 (39)	23.3 (35)	24.7 (74)	28.0 (42)	33.3 (50)	30.7 (92)	27.0 (81)	28.3 (85)	27.7 (166)
<i>iv) Discussion on FP method</i>									
Not discussed	92.0 (138)	74.7 (112)	83.3 (250)	84.7 (127)	63.3 (95)	74.0 (222)	88.3 (265)	69.0 (207)	78.7 (472)
Discussed	8.0 (12)	25.3 (38)	16.7 (50)	15.3 (23)	36.7 (55)	26.0 (78)	11.7 (35)	31.0 (93)	21.3 (128)
<i>v) Decision-Maker</i>									
Husband alone	36.7 (55)	28.7 (43)	32.7 (98)	30.7 (46)	12.0 (18)	21.3 (64)	33.7 (101)	20.3 (61)	27.0 (162)
Husband and wife	63.3 (95)	71.3 (107)	67.3 (202)	69.3 (104)	88.0 (132)	78.7 (236)	66.3 (199)	79.7 (239)	73.0 (438)

\*N.A. = Non-adopter \*\*A = Adopter

Note:  $r^2$  value for husband-wife communication and contraceptive behaviour, significant at 1% level throughout Panels (i) to (v) for coastal Andhra and total sample;  $r^2$  not significant for Rayalaseema except in Panel (iv).

with their wives once in six months or more were categorised under "rarely" and those who did so once a month on average, were classified as those who had "occasional" discussions.

It was observed that nearly half of the respondents (47 per cent) in the study population "rarely" discussed family planning with their wives (Table 1). However, region-wise, respondents who had "occasional" discussions were slightly higher (31 per cent) in coastal Andhra as compared to Rayalaseema (25 per cent). Further, the association between the frequency of joint discussion and contraceptive behaviour was highly significant (at 1 per cent level) in coastal Andhra only, thereby indicating the rational thinking of the people in coastal Andhra in regard to family planning and their attitude to involve their spouses in discussions on family size decisions as against those in Rayalaseema.

#### *Discussion on Family Planning Methods*

As the majority of women in developing countries are illiterate the husband is usually the major source of information about family planning methods. Further, his contacts with various types of people during his day-to-day activities, give him relatively better knowledge about various subjects, including the family planning programme. In the study area, an overwhelming proportion of the respondents (83 per cent) in Rayalaseema revealed that they had not discussed contraceptive methods with their wives, the corresponding figure was 74 per cent in coastal Andhra (Table 1). This clearly reveals the lack of initiative on the part of the husbands; again, more adopters than non-adopters had such discussions; there being a significant association between husband-wife communication regarding family planning methods and contraceptive behaviour in both the regions. In this context, it may be stressed that the husband should be properly educated on various methods of family planning and also, on the importance of communicating with his spouse in this regard.

#### *Decision-making about Family Planning Adoption*

Generally, in a majority of the families, the husband being the bread-winner is the prime decision-maker in all family matters, including the adoption of contraception. However, for the welfare of the whole family it is always desirable that both husband and wife should decide on the issue of practising a family planning method, as it is a very personal matter between the couple. It was observed that nearly one-third of the husbands (33 per cent) in the less developed region, Rayalaseema, as against only 21 per cent in coastal Andhra, were themselves the prime decision-makers with joint decisions being more frequent among adopters than non-adopters in both regions (Table 1). A significant association between the decision-maker and contraceptive behaviour was noticed only in the more developed region of coastal Andhra.

#### *Discussion at the Time of Adoption.*

It is very important for the acceptor to discuss his/her decision with his/her spouse before adopting a particular method of contraception. In the study area,

it was found that nearly one-fourth of the adopters in Rayalaseema (24 per cent) had not at all thought it necessary to talk about the decision to their wives at the time of adoption as against only 9 per cent in coastal Andhra, which clearly reveals the very low status of women in the former, backward region as compared to the latter.

### Conclusion

The above discussion suggests that the prevalence of low levels of intra-spouse communication in Rayalaseema may be one of the major factors for the low rate of family planning adoption observed in this region. In this regard, it may be suggested that all the eligible couples should be well educated on the advantages of having joint discussions on family planning matters. Further, efforts to improve the status of women like increasing their educational levels and employment opportunities have to be strengthened, especially in backward regions, which would help the women in a major way to realise and fulfill their important role in deciding their family size.

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# **WOMAN AND HER ROLE IN THE FAMILY DECISION-MAKING PROCESS: A CASE STUDY OF UTTAR PRADESH, INDIA\***

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## **Introduction**

The interim report submitted in March 1979 by the Working Group on Population Policy constituted by the Planning Commission recommended the achievement of a Net Reproduction Rate (NRR) of one by the year 2001 for all the states in the country. Such an objective implies a reduction in the birth rate from the present level of 33.2 per thousand population in 1981 to 21 by the year 2001 and a reduction in the death rate from 12.5 to 9. This means that 60 per cent of the couples in the reproductive age group would have to be protected by a modern method of family planning by the year 2001 as against the present protection level of 23.7 per cent. The question is whether the socio-cultural environment is conducive to the acceptance of family planning by individual couples on a massive scale and at a stage of family building which would be demographically meaningful? The status of women is considered to have an important bearing on the acceptance of family planning and it is significant that the Planning Commission while outlining the Third Five Year Plan (1961-66), expressly recognised the need for improving the status of women. An important feature of the National Population Policy first announced in 1976 was to raise the age at marriage for girls to 18 years with the treatment of any violation of the law as a cognisable offence.

Despite these governmental efforts, a woman in Indian society is still considered so inferior that she does not have an individual identity. She plays several roles throughout her life - those of a daughter, sister, wife, daughter-in-law, sister-in-law and mother, but seldom does she have the power to make decisions which concern her own life vitally. The role of a woman in decision-making as related to family building processes becomes rather important because the major responsibility of bearing and rearing children falls upon her. An increased role of women in decision-making related to this area is likely to make considerable improvements in the situation as they are more likely to accept population control measures. Increasing the role of women in decision-making will also be a great step towards ensuring women of their right to voluntary

\* The views presented in this article are those of the authors and do not necessarily reflect the views of the Operations Research Group

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motherhood and, in turn, in improving their status. Thus, a study of the role of women in the decision-making process related to family building processes and the various factors influencing it, is very important. The present study is a step in this direction. Our observations cover the entire period of a woman's reproductive age—from the day of her marriage till she attains menopause.

### **Data**

The data for the present study were taken from an on-going project of the Operations Research Group (ORG) on "Changing roles of women and the impact on demographic behaviour" which covered three villages: two in Western Uttar Pradesh (Rampur and Krishanpur)\*, one in eastern Uttar Pradesh (Rahimpur)\* and from one urban centre i.e. Lucknow, the capital of the state, by adopting two different approaches:

1. The anthropological approach wherein extensive case studies and participant observations were made on some selected families, and
2. a large-scale household survey of 30 villages surrounding each of the study sites.

For the anthropological study, a trained female social scientist was posted for a year in each of the three selected villages, to collect relevant information from 25 families selected from different caste and class groups. Two sets of data were gathered from each family:

1. activity time use data to understand the total dynamics of the division of labour within families, and
2. in-depth case studies to understand the decision-making process at the family level and to formulate hypotheses on relationships between productive roles of women and their reproductive behaviour.

In the large-scale survey, about 1000 households were interviewed thrice during two peak and one slack agricultural seasons to capture the impact of seasonality on female activities and also on disease patterns. This survey would also be useful for testing the hypotheses generated by in-depth case studies to a larger area, and for generalisation of the findings. For the present paper, the data were obtained from in-depth case studies of Rampur village.

### **Findings**

#### ***Age at Marriage***

In Indian society, the virginity of the girl is a prime requisite for marriage and has a significant effect upon her age at marriage. Traditionally, a father who cannot get his daughter married off before puberty is believed to be committing a grave sin. The low age at marriage clearly depicts the near universality of marriage in India.

According to the 1971 census<sup>1</sup>, in rural India, 13.8 per cent of the girls were

\* The names of the study villages have been deliberately changed to conceal their identities.

married between 10-14 years of age and 63.9 per cent between 15-19 years of age. The average age at marriage at the national level was reported to be 17.2 years.<sup>2</sup> The second All-India Family Planning Survey<sup>3</sup> conducted by ORG, showed that the mean age at marriage at the national level was 16.7 years while for the state of Uttar Pradesh and for Agra district it was 15.6 and 16.1 years respectively. Other studies<sup>4, 5</sup> indicate that age at marriage in India has increased during the last two decades. However, the present study shows that age at marriage in village Rampur is still considerably low and was estimated to be as low as 14.3 years. It is also significant that the census data of the village indicates a high proportion of marriages; as many as 49.2 per cent of girls marrying by the age of 13 years or less. This depicts that in certain pockets or particularly in some rural areas, the mean age at marriage is still much below the national average.

### *Who Decides Age at Marriage and Why?*

Generally in India, the girl does not have any control either over the choice of her partner or on the timing of her marriage. Though changes are occurring in urban India under the influence of education and modernisation, the decision to get the daughter married is taken solely by the parents. There are very few girls who rebel against or deviate from parental decisions. If they do, they are ridiculed and become objects of criticism both among the family members and the community. In Rampur village too, the parents decided the age at which to marry off their daughters. In none of the cases, except one, was the girl to be married consulted. The exception was a low caste Jatav girl educated upto the intermediate standard. According to her:

"I was studying in 11th standard when my marriage was fixed up by my parents. Though they had already taken the decision, I requested them to delay the marriage till I completed my intermediate. My parents immediately agreed to my request but only after consulting the parents of the groom."

Thus, a girl who is to be married and who has to spend her entire life with a strange person as his wife, plays a negligible or no role in the decision-making process involved in fixing the timing of her marriage and whom she is going to marry.

A detailed discussion with the informants indicated the following three basic reasons as to why parents decide to marry off their daughters at an early age:

- i) to comply with the general custom;
- ii) to keep the daughter chaste; and
- iii) to reduce financial liabilities.

In the following paragraphs each of the above factors have been briefly described:

i) *To comply with general custom* : It was observed that in the study village, people continued to follow traditional customs and married off their daughters before or soon after puberty. They believed that the father would be committing a grave sin if he did not marry off his daughters before or just after they



had attained menarche. As one of our informants said:

"Society will condemn us if our daughters are not married off before 15 years of age. About the father, the people will say that he must be earning from the labours of his young daughters."

This feeling is embedded in old Hindu mythology, which suggests that a girl should be married before she attains puberty and certainly after the first menstruation.<sup>6</sup> This attitude was more common among the high caste families of Brahmans and Thakurs of Rampur village. Commenting on this practice, one Brahman informant said:

"Even though we are in favour of increasing the age at marriage of girls we are compelled to conform to tradition because other communities consider us to be the custodians of this tradition and do not expect us to break it"

The Child Marriage Restraint Act (popularly known as the Sarda Act) which forbids the marriage of girls before 18 years, gets little support among rural communities. For example, none of the members of the 25 informant families selected for this study was aware of the existence of such a law. This amendment remained ineffective and till today as many as 10,000 child marriages are performed openly in Rajasthan on the occasion of "Akha Teej" towards the end of April every year. One can just imagine the extent of child marriages in the whole of India if that is the case for a single state, and that too in one season. Even law makers sometimes do not hesitate to break the law—one of the Ministers in Rajasthan was reported to have married off his two minor daughters.<sup>7</sup>

ii) *To keep the daughter chaste.* The other reason given by the informants for marrying off their daughters at an early age was to preserve their chastity and to save them from the cruel hands of high caste Zamindars (landlords). This fear was more commonly expressed by low caste and poorer people. However, they could not cite any such case when asked to give concrete examples. The people in Andhra Pradesh and Bihar also expressed the same fear and were against raising the age at marriage for girls.<sup>8</sup>

iii) *To reduce financial liabilities:* The poor economic condition of the family is yet another reason for the low age at marriage. More often than not, a daughter is considered as a burden to the family and therefore, the parents take the first opportunity to unburden themselves through her marriage, thereby reducing the number of mouths to feed. At least about a third of the informants confessed that this was one of the reasons which compelled the poor to marry their daughters off at an early age.

### ***Motherhood***

The residence of the woman being patrilocal, she stays with her husband after her marriage. The foremost concern of every one around her and even herself is *when* she will be pregnant and prove her fertility. Motherhood must be accomplished to complete a woman's life cycle. Further, in a low-income economy like that of rural India, the only power base available to women is

through child-bearing and especially by bearing sons.<sup>8</sup> A childless woman is considered abnormal and for her natural deviant behaviour she earns social opprobrium. The time interval between her *gauna* and first pregnancy is eagerly watched by all the family members.

The findings showed that out of 24 women, 37.5 per cent (high caste Hindu : 1 and low caste Hindu : 8) became pregnant during the first year of marriage. Another 20.8 per cent (high caste Hindu : 3 and Muslim : 2) conceived in the second year of marriage and the remaining 42 per cent (5 each, high caste and low caste Hindu) conceived in the third or later years. One low caste woman was childless. A discussion with the informants revealed that those who had conceived after three or more years, had generally married at a very young age and were physiologically incapable of producing children in the very first year of marriage. Moreover, such women were not encouraged by their mothers-in-law to cohabit with their husbands. It was also reported that such newly married women had slept with their mothers-in-law rather than with their husbands. Interestingly enough, all the informants said that their own choice or desire never received any support from any one. They obeyed their parents, in their own homes and their mothers-in-law in their husbands' homes.

When asked as to who had influenced them to have their first child early in their marriage, 11 (45.8 per cent) of the 24 respondents (high caste Hindu : 4; low caste Hindu : 6 and Muslim 1) stated to have been influenced by their parents-in-law; followed by their husbands (29.1 per cent; high caste Hindu : 2; low caste Hindu: 4 and Muslim : 1). About a fifth (high caste Hindu:3 and low caste Hindu:2) said that nobody had pressurised them to go in for an early pregnancy; and one low caste Hindu woman said that she had "used her own judgement in this regard."

Discussions with the informants support the fact that the in-laws were more eager to have grandchildren, particularly sons for the continuance of their family line and it gave them personal satisfaction that they had *seen* their grandchild(ren) before their death. The husband's desire for early parenthood was governed by many factors, such as his desire to prove his *manliness*, continuation of his family name, and lastly to give him more status as a *responsible person* (by becoming the father of a child). At this stage, the wife who is generally much younger than the husband and also forced by cultural "norms" which do not permit husband-wife communication on the number of children the couple would like to have, has hardly any say. Sexual exploitation is seen more commonly among those women who are economically dependent upon their husbands. It is significant that none of the respondents were ever consulted by their husbands in the matter of having sex. It was always the decision of the husband which forced a woman to have sex with him even when she was not desirous. Saying "No" to the husband meant asking for a beating.

### *Status of the Childless Woman*

Barrenness is attributed to the misdeeds of one's past life, for the Hindu generally believes in the theory of *Karma*. Barrenness is dreaded in the family

and is regarded as a great misfortune. A woman without child is placed low in society because she does not perform the "expected roles and duties" of a mother fully. She is debarred from participating in any sacred ritual performance, which results in discrimination by way of opportunities given to her for her social emancipation. Her jealousy of other women who are mothers and of their children is so much dreaded that after her visit, some mud from her foot prints is waved round the child's head and thrown into the fire as a protection against her evil eye. A barren woman earns a bad reputation for her family as society persistently emphasises the child-bearing aspect of the woman as paramount. Such a woman completely loses her role in the decision-making process whether in familial or in extra-familial matters. The majority (22 out of 25 informants) in village Rampur reported that not only does the man remarry if his first wife is found to be barren as he is interested in the continuation of his family, but often his wife, if infertile, will insist that he should go in for a second marriage. The informants when asked were able to cite five such cases in their village where the man had married a second time. However, in such families, the first wife completely lost her status and was reduced to being a mere servant of the family, who was seen serving the second wife of her husband all the time, especially if the latter was fertile. One of the informants stated:

"In our village there is a daughter-in-law of a Thakur family who can be considered as the most beautiful woman around. But unfortunately, she is infertile since the last 10 years. Initially for 2-3 years, her husband gave her a lot of love, affection and support and she was also shown to all sorts of doctors but without any success. As time passed and when her barrenness became established, she became the object of severe criticism and even her husband withdrew all his support. Now she is avoided by women with children and is often not invited to any of the important functions. Due to her insistence, her husband has married again and has eventually got a child from his second wife. Now the first wife has been reduced to a mere servant and often gets abused, beaten and tortured by all the family members."

Our sample comprised of one childless woman and it was observed that she was also leading the same miserable life as stated above. Although her husband did not re-marry, according to her she was being treated "worse than a dog." "It is enough that I am getting at least food to survive," she said. Thus, the plight of a barren woman becomes a permanent example which goads young brides to become pregnant as early as possible and achieve motherhood, particularly of sons, to establish themselves as fertile and gain a higher status in familial decision-making processes.

### ***Decisions on Family Size and Acceptance of Family Planning***

This section discusses the role of women in village Rampur in the decision-making process as regards their family size and acceptance of family planning.

#### ***Family Size Norms:***

In Rampur, family size norms varied between different caste groups. For low and high caste Hindu informants, the ideal number of children was 4 and 5 respectively. The concept of a "few" and a "large" number of children as

perceived by all the informants, was 4.0 and 8.0 in that order. The second All-India Family Planning Survey<sup>3</sup> shows that at the national level, a family with 3.2 children is considered as small and that with 4.8 children as large. This indicates that couples in village Rampur were still in favour of a relatively larger family. This was particularly true among the low caste Hindu couples (Table 1).

TABLE 1

## Concept of few, large and ideal number of children

Caste	Total number of respondents	Mean number of children								
		Few			Large			Ideal		
		Wife	Hus-band	Total	Wife	Hus-band	Total	Wife	Hus-band	Total
High caste										
Hindu	9	4.3	3.1	3.7	8.9	6.3	7.6	5.0	3.0	4.0
Low caste										
Hindu	13	4.0	4.0	4.0	8.7	7.4	8.0	5.8	4.2	5.0
Muslim	2	6.0	4.5	5.3	11.0	8.5	9.7	8.5	5.5	7.0
All	24	4.3	3.7	4.0	9.0	7.0	8.0	5.9	3.9	4.9

*Ever Had Discussion on Family Size and Use of Family Planning Methods*

Inter-spouse communication with regard to family size and use of a family planning method can be taken as an indication of better understanding and more egalitarian participation of the spouses in the decision-making process involved in family formation. A number of studies<sup>4,10</sup> have shown that husband-wife communication on these aspects plays a crucial role in the acceptance of a family planning method and in limiting family size.

Indian studies, however, show that in general, due to various social values like shyness etc., there exists a rather complete lack of communication between the spouses. If at all communication takes place, it is at a fairly advanced stage of the family building process i.e. after the couple has already achieved their desired family size of three or more children. The second All-India Family Planning Survey data show that in its rural sample, almost two-thirds (71.8 per cent) of the couples had never talked about the number of children they would like to have and whether they should adopt family planning. Those who had, had done so usually after having had one or more children<sup>3</sup>. In a similar study among Muslims, Khan<sup>3</sup> observed that only 4.5 per cent of both husbands and wives had correct knowledge of the number and sex of the children their spouses wanted to have. Another 41 per cent knew correctly the family size their spouses desired but did not have any knowledge of the sex composition of the children. The remaining 53 per cent of the husbands and wives did not have any understanding whatsoever of both the sex and the number of children their spouses desired.

In Rampur, a similar situation prevailed—of the 25 informants, only one reported that she had discussed about the family size desired by her with her husband and that too immediately after marriage. The wife was educated upto the 12th standard and her husband was a post-graduate school teacher. A number of studies in India have also shown that with education, particularly of the wife, inter-spouse communication increases and so does her role in deciding the number of children.<sup>4, 5, 11</sup> Discussions with the informants revealed that the lack of inter-spouse communication was deeply embedded in the belief that discussions on the number of children might be hazardous for the health of the living children and might even cause death of some of their children. The total submissiveness of women to their husbands and their shyness were other reasons. As one of the informants commented: "Discussion on number of children is immodest, therefore I would be ashamed to discuss it with my husband"

An analysis of the 41 sterilised couples of village Rampur showed that 41.5 per cent of them had talked about family size after achieving the desired number of children and that such discussions had always taken place at the initiative of the husband. Unfortunately, the above data do not give the sex-wise break-up of those who had mentioned that the husband and wife were jointly responsible for taking the decision regarding family size. Various studies have shown that in general, male respondents try to give a socially desirable answer and often state that both spouses had participated equally in decision-making. However, on probing, most wives reveal that the decision was taken by the husband or other elder members of the family.<sup>1</sup>

#### *Why Not Using any Family Planning Method?*

Of the 25 couples selected for the study, ten had accepted sterilisation and the rest had never used any family planning method. As these families were not selected at random, the acceptance rate (40 per cent) cannot be taken as representative of the village. The secondary data of Rampur village provided by the staff of the Primary Health Centre (PHC) indicates that about 20 per cent used various methods as presented in Table 2.

TABLE 2  
Total number of couples using various modern family planning methods  
in village Rampur.

FP Method	Current Users No (%)
Vasectomy	7 (1.8)
Tubectomy	34 (8.7)
IUD	15 (3.8)
Oral Pills	4 (1.0)
Condom/Nirajdh	20 (5.2)
Non-users	310 (79.5)
Total	390 (100.0)

### *Who Takes the Decision about Family Size?*

Our discussions with the informants show that in the absence of husband-wife communication, it was generally the husband who had the "final say" on the number of children the couple should have. Women played a negligible role in such decision-making processes. In fact, when the women were asked how many *more* children they would like to have, many replied that their husband should be asked this question and not they. However, the Second All-India Family Planning Survey<sup>3</sup> data show that in rural India about 33 per cent of the respondents said that the decision on family size was taken jointly by the husband and wife. About 53 per cent reported that it was the husband who took the decision and in about 9 per cent of the cases, an elder member of the family was mentioned as the final decision maker (Table 3).

TABLE 3

Who takes the decision about family size?

Person	Rural (%)	Urban (%)	Total (%)
Husband	53.2	41.7	50.8
Wife	1.9	2.9	2.1
Both	32.8	46.9	35.8
Elder family member	9.3	7.5	8.9
Do not know	2.8	1.0	2.4
Total 'N' (in thousands)	92656	24346	117002

Source: Khan, M E and C V S Prasad 'Family Planning Practices in India—The Second All India Survey' Monograph Operations Research Group, New Delhi (1983).

Probing for the reason(s) of non-acceptance of family planning revealed that three of the 15 non-practicing respondents were widows. Of the remaining 12, six had, on average, two to three living children and wished to have another two or three children to complete their family size. As reported earlier, neither had the informants ever discussed family size with their husbands nor had their husbands taken any initiative to use a temporary family planning method to space pregnancies.

Two of the female respondents stated that they would try to convince their husbands to allow them to adopt sterilisation after they had achieved their desired family size. They strongly felt that women should have the right to control their family size and that they should not go on bearing children "like animals". Commenting upon this, one of the two women, said:

"After all, we are human beings and not bitches. A bitch gives birth to 4-5 puppies at a time and that too many times in her lifetime. Her puppies are left at the mercy of nature. If we bear the same number of children, nature would never come to our rescue" (Jamuna Devi, age 22 years, matriculate; husband: agriculturist and matriculate).

However, both the women agreed on one point, namely that the final decision about whether or not they should accept family planning would be the husband's. The remaining four who had not completed their desired family size were not certain as to whether they would practice family planning in future. Of the remaining six informants who had already achieved their desired family size, three were against family planning on religious grounds—"conception is exclusively a gift of God and hence contraception is a sin." Their views were also shared by their husbands. The remaining three informants wanted to adopt family planning but had not taken any action. One of them said she was continuously trying to convince her husband to permit her to undergo the tubectomy operation but he had not agreed so far. she added:

"I have been insisting with him for the past one year to give me permission for a tubectomy. But every time I express this desire, I get scolded and beaten up. Now I have decided not to allow him to have intercourse with me till he gives me sanction, whatsoever be the consequences of this revolt "

This example clearly demonstrates that the woman is often eager to accept contraception but it is the apathy of her husband which prevents her from doing so. Similar results were obtained by Khan et al 10 in a village in Western Uttar Pradesh. It may be interesting to mention here that similar probing of non-acceptor women who had achieved their desired family size indicated that their non-acceptance was due to their fatalistic attitude (12 per cent), dislike of existing family planning methods (16.6 per cent), and lack of awareness of modern contraceptives (3 per cent). Interestingly, none mentioned opposition from the husband or his apathetic attitude towards family planning as a reason, perhaps because in such large-scale sample surveys, building up confidence with the respondents is rather difficult and hence one often misses the true picture on such sensitive issues.

It may not be out of place to mention that in village Rampur all the non-acceptors had fairly good knowledge about family planning methods. They unanimously felt that a couple should adopt a permanent method (sterilisation, and preferably, tubectomy) in case they were both agreeable. They were also aware of the disadvantages of temporary methods. Acceptors, the ANM and friends, in that order, were their main source of information.

### *Analysis of Acceptors of Family Planning*

Table 4 presents some selected demographic characteristics of family planning acceptors in Rampur. It shows that the age of the wife of acceptor couples of sterilisation was higher than the national average. For example, the mean age of the wives of vasectomised persons was reported to be 38.0 years in Rampur as against the national average of 31.6. Similarly, the average number of living children of sterilised couples in the study village was much higher (between 5.1 to 5.8) than the national average (between 3.5 to 3.7) as well as that for the state of Uttar Pradesh (about 4 children). The number of living sons at the time of sterilisation was also reported to be higher (2.8 to 3.0) than the corresponding national figure (2.1 to 2.2).

TABLE 4

Demographic characteristics of acceptors of tubectomy and vasectomy, 1980-81

Characteristic	All India*		Uttar Pradesh**		Rampur	
	Vasec- tomy	Tubec- tomy	Vasec- tomy	Tubec- tomy	Vasec- tomy	Tubec- tomy
Mean age of wife (years)	31.6	30.4	33.0	32.5	38.0	31.8
Average no of living children	3.5	3.7	4.0	4.1	5.8	5.1
Average no of living sons	2.2**	2.1**	NA	NA	3.0	2.8
Mean age of last child	—	—	—	—	2.6	2.1

Source: \* Family Welfare Programme in India Year Book (1981-82), Ministry of Health and Family Welfare, New Delhi (1982)

\*\* Khan, M E and C.V.S Prasad. "Family Planning Practices in India ) The Second All India Survey" Monograph. Operations Research Group, New Delhi (1983).

The above analysis clearly demonstrates that these couples had adopted sterilisation, only after five to six children and on average, three living sons, thereby indicating that the small family norm has not yet taken root in the villages of Uttar Pradesh. The reasons could be several. During our discussions with the informants it appeared that high infant and child mortality loomed large in their minds and they wanted to be sure before accepting sterilisation that at least a few children would survive. This fear was not unfounded as infant and child mortality for rural India is still as high as 127 and 137 respectively<sup>2</sup> and was aptly described by a high caste Brahman woman who said:

"When I got myself operated I had five living children—two sons and three daughters. Since then, two of my children—a son and a daughter have died. I am very much fearful that, God forbid, the same may happen to my other children, and then, what would I do?"

A similar observation was made by Marshall<sup>12</sup> in village Bunkipur. According to him:

"In the village a man had three sons and was sterilised. Six months later, all his children died in an epidemic, but he cannot have any more."

Similarly, a strong desire for a second son further delays the acceptance of sterilisation. In fact, studies<sup>4</sup> have shown that women have a stronger desire for a second son than their male counterparts, the main reason as mentioned by the informants, being their deeply embedded belief that sons are their only hope in their old age and perhaps, the only source of power in the family and community. The strong desire for a *second son* was also reflected in the Second All-India Survey<sup>3</sup> which showed that 86 per cent of the respondents were willing to have two or more "extra" daughters to get a second son. The present study shows that this desire was much stronger in village Rampur than reported at the national level. Commenting on this strong desire for sons, a Thakur woman who has four living sons, said:



"In the village, the status of a family rises with the number of sons it has. You see, factional quarrels are common in our village and therefore only a large cohort of sons or brothers can be confident to face them. A family with no son or one son can easily be suppressed by other villagers"

Similar observations were made by Wyon and Gordon<sup>13</sup> and Mamdani<sup>15</sup>, and it will not be out of context to quote one statement from the former study:

"Factional quarrels in the villages are won by men and not by contraceptives."

The desire for two sons has also been observed by Opler<sup>15</sup> and Poffenberger<sup>16</sup> who reported that couples generally feared the loss of their only son and also mentioned an old belief among the villages that "one son is not a son". Similar views were expressed by a low caste Jatav woman of village Rampur. According to her:

"One tree does not look good in an open field as there always is a danger of its fall. The fall of one tree can be checked if one more tree is grown beside it. Similarly two sons are always believed to be good in our society."

According to our observations in village Rampur, the pressure of in-laws also caused delays in the non-acceptance of family planning as also in the adoption of sterilisation, which is the most popular family planning method in India. Being elders, they exercise their power to stop their sons and daughters-in-law from practicing contraception. We have come across at least five couples among the 27 sterilisation acceptors in our village who deferred their decision to adopt tubectomy as long as their father-in-law or mother-in-law was alive. A low caste Jatav woman explained it thus:

"My husband took the decision that I should get operated as the existing number of children are more than enough. When I asked permission from my mother-in-law, she got furious and said as long as she is alive, she will not allow this sinful act in her house. Only after her death, was I able to get operated, and until that time, we used Nirodh."

Yet another reason for adoption of sterilisation at a late age is the fear that a woman whose children are old enough to be having children of their own may feel herself demeaned if she becomes pregnant again, particularly if there is a daughter-in-law in the house. In Rampur there were at least three women who were about 45 years of age, who had accepted tubectomy to save themselves from such an embarrassment. They said; "In our village daughters and daughters-in-law becoming pregnant is a welcome sign but not a mother-in-law becoming pregnant when the daughter-in-law is also in the family way." Similar findings have also been reported by Gould<sup>17</sup> in a village of Central Uttar Pradesh.

A discussion with the 41 sterilisation acceptors on the person who initiated the discussion on sterilisation showed that in half of the cases, (high caste Hindu:11 and low caste Hindu:9) the woman herself had approached her husband for undergoing sterilisation. A detailed discussion with them shows that introduction of the laparoscopic method of tubectomy, which is less time-consuming and does not force a woman to abstain from her regular household chores for a significant length of time, was gaining popularity in Rampur and its surrounding areas. They obtained information about this method from ANMs, relatives

and satisfied acceptors. In the remaining 21 cases (high caste Hindu: 10; low caste Hindu: 8; Muslim: 3), the husbands themselves decided to adopt sterilisation. Seven of them underwent vasectomy and the remaining motivated their wives to adopt tubectomy.

Further, the final decision to adopt sterilisation had been made by 24 husbands (high caste Hindu: 13; low caste Hindu: 8; Muslim: 3), whereas in seven cases (high caste Hindu: 2 and low caste Hindu: 5) the wives independently decided to go for tubectomy, six couples (high caste Hindu: 5 and low caste Hindu: 1) took a joint decision while in the remaining four cases (high caste Hindu: 1 and low caste Hindu: 3) it was the mother-in-law who took the final decision. Of the seven wives who had taken their own decision to adopt tubectomy, five were from low caste Hindu families. Low caste women who were economically less dependent upon their husbands, were found to be more independent and able to take a decision even in the event of opposition from their husbands. The comments made by two of them are given below:

"I had to face a lot of complications during the delivery of my last child and I was narrowly saved. At that time laparoscopic operations were being done at the PHC. I asked the permission of my husband who bluntly refused, but I was adamant. One day Bahanji (ANM) was passing by our house I stopped her and expressed my desire. She told me about this operation in detail and took me to the PHC on the day of the laparoscopic camp, at which I got operated. My husband did not even accompany me." (Govinda Devi, illiterate, two sons and four daughters).

"My husband met with an accident last year and broke both his legs. This confined him to bed for about six months and made him economically unproductive. Now he has started working but he gets work only for a few days in the week, because being handicapped, people hesitate to give him regular work. I already had six children and yet my husband strongly objected to my decision to go for an operation. I took an independent decision and went with Bahanji (ANM) alone and got operated." (Maya Devi, illiterate, three sons and three daughters).

It was interesting to note that both the high caste women were quite near their menopausal age (about 41 years) and had grown-up married sons living with them. Because of their husband's demands they were still sexually active and feared that they might become pregnant as their husbands were not interested in using any family planning method. As mentioned earlier also, to become pregnant after becoming a mother-in-law is considered shameful. Hence both women decided to go for a tubectomy even in the face of opposition from their husbands. In both cases their sons were in their favour and supported them against their father's wish. The reason was the same, namely to save themselves from the embarrassing situation of witnessing their mothers being pregnant in the presence of their wives. It also shows that the mothers of grown-up sons are more independent and oftentimes use them as their power base to take decisions which sometimes are not acceptable to their husbands.

### Summary

The foregoing paragraphs, attempt to analyse the role played by the woman in the decision-making process involved in family building from the time of her marriage till the time she attains her menopause. The data, drawn from

village Rampur in Western Uttar Pradesh, and part of a larger study, revealed that the mean age at marriage of girls in Rampur, is still considerably low (14.3 years) as compared to the national average. The girl's age at marriage and her partner, in all the cases studied, were decided by her parents. The main reasons to marry her off at an early age were to comply with general custom, to keep her chaste, and to reduce financial liabilities.

The earlier a woman achieves motherhood, the earlier she attains a 'higher status in the family. A fairly good number (5 out of 24) of women in village Rampur conceived in the first year of their marriage. Here, the decision to go for an early pregnancy was largely influenced by the in-laws, followed by the husband, who were particularly keen to have a male child due to various socio-cultural reasons such as the continuation of the family "name", giving the husband the elevated social status of being the father of a child, and of proving his manliness. Here again, the participation of the woman in deciding the timing of her first child, does not find any place. As the main role of a woman is considered to be that of procreation, any deviation from this natural behaviour is considered to be a misfortune for the family and the community at large. In Rampur, a barren woman was the target of severe criticism and led a miserable life. She lost her total role in decision-making on any family-related issue.

Family size norms in Rampur were higher as compared to other available statistics. Inter-spouse communication with regard to family size and use of a family planning method was negligible. Only in one solitary case, a woman had discussed this with her husband—the couple was educated and it was the husband who had initiated the discussion. Taking the final decision on family size was again the husband's domain. Most of these findings are corroborated by studies based on large-scale sample surveys. In the village, at least 41 of the total 390 couples had adopted permanent contraception. Of the remaining 349, 15 were using the IUD; four, the oral pill; and 20 were using condoms or Nirodh.

The analysis of acceptors showed that couples adopted sterilisation at a very late stage, after the fifth or sixth child. The common reason for not accepting a terminal method after the second or third child was the fear of losing children. Couples in this village also delayed adoption of sterilisation till they had two sons, mainly because of the belief that sons give their parents old age security and perhaps are the only source of power in the family and community. The pressure exerted by the in-laws forbidding couples to use any family planning method was yet another factor which delayed acceptance (as older people consider contraception a sin). The presence of daughters-in-law in the family often encouraged the mothers-in-law, who were still in their reproductive ages to opt for sterilisation, as seen in two cases in Rampur.

The laparoscopic method of tubectomy which is gaining popularity in Rampur village and its surrounding areas, was found to have a significant impact on the decision-making process,—as many as 49 per cent of the women had initiated the discussion and expressed their willingness to their husbands to get themselves tubectomised; only 11 per cent had taken an independent decision. Here again, a majority of the husbands (58.5 per cent) had taken the final deci-

sion for adopting sterilisation.

Thus, it can be concluded that in village Rampur, it was mainly the husband who took the decision at all the stages of the family-building process. Other family members like the in-laws also played a significant role in influencing this decision. The woman, who is the main actor on the stage and about whom all the decisions are taken, played only a marginal role or no role at all.

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# **DETERMINANTS OF FAMILY PLANNING ACCEPTANCE IN INDIA**

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## **Introduction**

India launched a family planning programme in 1951 and since then, a wide variety of approaches have been advocated to motivate married couples to adopt one or the other method of family planning to space and limit their families. The results of the 1981 census however, have shown an alarming growth rate of 24.75 which indicates the low performance of the family planning programme—as of 31st March 1981 only 22.7 per cent of the couples were effectively protected by a family planning method. Further, the couple protection rate was not uniform among all the states of the country, possibly due to demographic, socio-economic, cultural and family planning programme factors. Therefore, it was considered worthwhile to find out the various factors which are responsible for these inter-state differentials in the acceptance rate of family planning.

A number of scholars<sup>1-7</sup> have utilised different statistical methods to determine the influence of various factors on family planning performance differentials among states. The present paper is an attempt to study the effect of a few socio-economic and programme implementation factors leading to the acceptance of family planning in Indian states, with the latest available data, using multiple linear regression analysis for identifying the contribution of each variable in determining family planning acceptance.

## **Sources of Data**

The socio-economic and programme execution variables used for the present study are indicated in Table 1.

i) The data for the variables  $X_1$  and  $X_5$  were collected directly from the Census of India,<sup>8</sup> whereas data for  $X_1$  and  $X_6$  were computed from the Census of India<sup>9</sup>. Information regarding the  $X_3$  and  $X_8$  variables was collected from the Family Planning Year Book, India, 1981-82.<sup>10</sup> However,  $X_4$  was calculated on the basis of the data collected from the Statistical Abstracts, India, 1980<sup>11</sup>. Besides these data, information regarding variable  $X_7$  was taken from the Statistical Abstracts of Punjab, 1982-83<sup>12</sup>. Table 2 presents the information about all the variables for 14 selected states in India.

## **Methodology**

To begin with, the seven variables  $X_1$  to  $X_7$  were considered for determin-

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TABLE 1

## List of selected variables

Nature of Variables	Variable No.	Description
<i>Independent Variables</i>		
Direct Variables	X <sub>1</sub>	Percentage of population engaged in non-agricultural occupations.
	X <sub>2</sub>	Percentage of general literacy for ages 5 +
	X <sub>3</sub>	Per Capita expenditure on family planning per 100,000 couples
	X <sub>4</sub>	No. of beds per 100,000 population
Indirect Variables	X <sub>5</sub>	Female mean age at marriage
	X <sub>6</sub>	Percentage of urban population
	X <sub>7</sub>	Per capita income
<i>Dependent Variable</i>		
	X <sub>8</sub>	Percentage of couples effectively protected with one or the other method of family planning

TABLE 2

## State-wise acceptance of family planning rates and selected socio-economic and programme execution variables, India, 1981

State	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>7</sub>	X <sub>8</sub>
Andhra Pradesh	12.9	34.1	12.5	69	17.6	23.3	649	26.2
Bihar	6.2	30.2	6.0	40	17.1	12.5	447	11.9
Gujarat	12.9	49.9	17.1	103	19.6	31.1	865	33.3
Haryana	11.1	41.7	12.1	70	18.2	21.9	1067	28.7
Karnataka	12.9	43.9	12.1	94	19.4	28.9	637	23.2
Kerala	15.7	78.9	15.6	196	21.9	18.7	619	30.9
Madhya Pradesh	9.1	32.3	8.9	36	17.2	20.3	489	21.3
Maharashtra	14.8	53.6	10.1	140	18.9	35.0	990	34.6
Orissa	8.3	38.8	13.0	49	19.1	11.8	595	25.4
Punjab	12.3	46.3	12.7	119	21.1	27.7	1380	24.9
Rajasthan	9.5	28.4	8.9	61	17.0	21.1	555	13.5
Tamil Nadu	15.4	52.6	9.5	95	20.3	32.9	615	27.6
Uttar Pradesh	7.5	31.4	9.3	49	18.3	17.9	515	10.8
West Bengal	12.7	46.2	8.0	103	19.4	26.5	761	23.5
Mean	11.5	43.5	11.1	87.4	18.9	23.5	722.4	24.0
S.D. (+)	2.9	12.8	2.9	42.5	1.4	6.9	256.3	7.2

ing the relative importance of each variable in explaining variations in family planning performance among states ( $X_8$ ) utilising the multiple regression method which takes into consideration 'n' number of variables and finds out the contribution of these 'n' number of variables in determining the dependent variable (i.e. percentage of variation explained).

An important factor in fitting the multiple linear regression model is the variable entry into the regression equation. Many methods have been suggested by Drapper and Smith<sup>13</sup> and Chatterjee and Price,<sup>14</sup> all of which take into consideration the correlation matrix and the first variable entry into regression as that variable which has the highest order of correlation with the dependent variable. An attempt has been made in this paper to consider the variable entry into regression through the highest order of correlation. Therefore, zero order correlation coefficients were calculated for each of the independent variables with the dependent variable. By considering the order of variables on the basis of zero order correlation coefficients, two runs were made. A set of four variables ( $X_1, X_2, X_3, X_4$ ) which have a direct impact on acceptance ( $X_8$ ) were considered in the first run and all the variables both direct and indirect, were considered in the second run. Further, partial order correlation coefficients were calculated between the predictor variable and the dependent variable by keeping all the other variables constant.

### Results and Discussion

The determination of the predictor variables which lead to the acceptance of family planning is a complex phenomenon. However, a modest attempt was made by selecting a set of seven important variables from various research experiences. These seven variables which were categorised as direct and indirect were correlated with the dependent variable to find out their relationship.

Table 3 gives the zero order correlation coefficients of the predictor variables

TABLE 3

Zero-order correlation coefficients of the predictor variables (direct and indirect) with the acceptance of family planning

Predictor Variables	Zero order correlation coefficients
Direct Variables	
$X_1$	0.7955**
$X_2$	0.7118**
$X_3$	0.6729**
$X_4$	0.6556**
Indirect Variables	
$X_5$	0.5631*
$X_6$	0.5860*
$X_7$	0.5156*

\*\* Significant at 1 per cent level.

\* Significant at 5 per cent level

with acceptance of family planning. The positive relationship between the percentage of population engaged in non-agricultural occupations ( $X_1$ ) was found to have the highest significant correlation (at 1 per cent level) with family planning acceptance. Other direct variables ( $X_2$ ,  $X_3$  and  $X_4$ ) also showed similar results as that of  $X_1$  with  $X_8$ . However, the indirect variables had a less significant correlation coefficient (at 5 per cent level) with the dependent variable.

Zero order correlation coefficients show the relationship of one variable with another, but fail to predict the influence of other variables on the dependent variable. One approach to overcome this lacuna is by using partial correlation coefficients and further multiple regression methods.

Table 4 shows the predictor variables explaining the variations in family planning acceptance for different sets of regressions with partial correlation coefficients. Slightly more than 77 per cent of the variation in family planning acceptance among the Indian States was explained by a set of four direct variables.

However the major contribution (63.4 per cent) came from the 'percentage of population engaged in non-agricultural occupations' ( $X_1$ ). When the other three direct variables were included in the regression, the change was found to be minimal. Further, when all the seven variables were included in the analysis (Table 4, Regression equation II) about 91 per cent of the variation in family

TABLE 4

**Predictor variables explaining the variation in acceptance of family planning**

Predictor variables	R <sup>2</sup>	Partial Correlation Coefficients
<b>Regression Equation I</b>		
$X_1$	63.28	0.6394
$X_1 + X_2$	64.90	0.2915
$X_1 + X_2 + X_3$	74.37	0.5253
$X_1 + X_2 + X_3 + X_4$	77.26	0.3355
<b>Regression Equation</b>		
$X_8 = -9.37 + 1.79X_1 + 0.25X_2 + 0.89X_3 - 0.09X_4$		
<b>Regression Equation II</b>		
$X_1$	63.28	0.4335
$X_1 + X_2$	64.90	0.7439
$X_1 + X_2 + X_3$	74.37	0.6239
$X_1 + X_2 + X_3 + X_4$	77.26	-0.6778
$X_1 + X_2 + X_3 + X_4 + X_5$	79.66	-0.6560
$X_1 + X_2 + X_3 + X_4 + X_5 + X_6$	82.46	0.1406
$X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + X_7$	90.57	0.6799
<b>Regression Equation.</b>		
$X_8 = 25.71 + 1.19X_1 + 0.81X_2 + 0.80X_3 - 0.17X_4 - 2.94X_5 + 0.10X_6 - 0.01X_7$		



planning acceptance was explained. However, the percentage variation ( $R^2$ ) increased from 77.26 to 90.57 with the inclusion of indirect variables ( $X_5$ ,  $X_6$ ,  $X_7$ ) along with direct variables ( $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ ) into the regression.

The percentage variation explained ( $R^2$ ) shows the influence of all the variables which were included in the regression. But, the influence of one variable on the dependent variable by keeping other variables constant is revealed by the partial correlation coefficients. In equation I (Table 4) the partial correlation coefficients of  $X_1$  and  $X_3$ , when other variables were kept constant, were found to be higher (0.6394 and 0.5253, respectively). However, in regression equation II, the partial correlation coefficient of  $X_1$  with  $X_8$  was low (0.4335), though that of  $X_2$  with  $X_8$  was the highest (0.7439). This clearly shows that in a set of all predictor variables the 'percentage of population engaged in non-agricultural occupations' ( $X_1$ ) alone may not create a dent in the acceptance of family planning ( $X_8$ ) unless it is followed by improvement in general literacy ( $X_2$ ).

### Conclusions and Implications

It is evident from regression equations I and II (Table 4) that the variation in family planning acceptance as explained by the direct variables was 77.26, whereas by including the indirect variables it increased to 90.57, which shows a minimal increase. This clearly explains that the influence of direct variables was high and among them, variables  $X_1$ ,  $X_2$  and  $X_3$  made the maximum contribution towards family planning acceptance.

The analysis suggests that an increase in general literacy, and providing non-agricultural occupations in par with an increase in the expenditure on family planning may certainly lead to an increase in the acceptance rate of family planning in India. Therefore, future plans for enhancing acceptance should consider these factors.

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# **LAPAROSCOPIC STERILISATION: RESULTS OF A TWO-YEAR FOLLOW-UP STUDY**

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**and**

**DR. P.V. SATHE\*\***

## **Introduction**

The publication of the preliminary report on laparoscopic female sterilisation with the use of silicon rubber bands by Yoon and his co-workers<sup>1</sup> has made the procedure popular not only in developed countries but in the rural areas of developing countries like India. Whenever a new operative technique is introduced, it becomes essential to evaluate the technique for possible side-effects which may affect its acceptability. The evaluation assumes importance when the technique is used on a mass scale as in camps and in peripheral centres. Thus, such a study is especially essential for laparoscopic tubal sterilisation, which is now being increasingly adopted and popularised as a part of the national family welfare programme.

Yoon et al<sup>2</sup> in a subsequent two-year follow-up study of 100 cases observed that although the method is relatively simple and quick, it is not totally free from complications. Several workers<sup>3-6</sup> have studied the incidence of complications after laparoscopic sterilisation. In India, while such work<sup>7-11</sup> has covered a fairly large number of patients, the studies were either hospital-based and/or involved very limited active attempts at follow-up. Moreover, the duration of follow-up, when attempted, was short. Long-term follow-up has been attempted by very few workers and there appears to be a paucity of reports on active follow-up of a sizeable number of patients over a fairly long period. It is hoped that the present study will help to fill up this gap.

## **Sample & Methodology**

All cases admitted for laparoscopic sterilisation at camps held during the calendar year 1987 in Paithan District in Aurangabad (which is the headquarters of the rural field practice area of the Medical College, Aurangabad), were subjected to routine pre-operative examination. This included the recording of personal data, menstrual and obstetric history and general, systemic and per vaginal (P.V.) examinations. It also included routine blood examinations for the determination of haemoglobin levels.

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A single-puncture laparoscope was used and tubal ligation was done by the use of silastic bands. Except for four cases which required sodium pentathal injections, all cases were operated under local anaesthesia with pethidine, phenargan and atropine. A total of 469 cases were operated during the calendar year 1981 of which 133 belonged to the villages covered under the rural field practice area and were available for follow-up. The remaining 336 cases came from other villages and were excluded from the study as it was administratively difficult to follow them up.

All these 133 cases were called for follow-up to the nearest of the seven sub-centres of the rural field practice area. In the case of defaulters, a home visit was made by paramedical workers, and it was repeated if required. The physical examination was carried out either at the residence of the patient or at the examination centre. At least three follow-up visits were thus made, the first at 6-8 weeks, the second at 12-13 months and the third at 24-25 months after the operation. The follow-up examinations were done by lady medical interns, under supervision. Some patients who had severe complaints were referred to the gynaecologist and details of the treatment were obtained from the patient. The information was collected using a pre-designed proforma. Menstrual history after the operation included history of first menses after the operation as well as that immediately preceeding the follow-up visit.

### Findings

Of the 133 cases only 109 (81.9 per cent) could be followed up at the time of the first follow-up visit and 106 of these could be interviewed at the second and the third follow-up visits. The remaining cases could not be traced even though repeated home visits were made, due to the absence of the respondents at their residence and/or their migration from the rural field practice area. The three cases (out of the 109) which were not available at the second visit were not available at the time of the third follow-up visit as well.

The results of the first follow-up visit conducted 6 to 8 week after the operation, indicated that the most common immediate post-operative complaint was backache, as expressed by 44.0 per cent of the respondents. However, in no case was it severe enough to incapacitate the respondent. History of leucorrhoea given by 30 respondents at the time of the first follow-up visit, was confirmed by P.V examination in 23 respondents only; of these, 15 had had a history of leucorrhoea prior to the operation. Thus, leucorrhoea had appeared only in eight (7.4 per cent) of the cases after the operation. The P.V. examination in all these eight cases indicated that leucorrhoea was due to mild to moderate genital sepsis.

Twenty-two respondents (20.1 per cent) complained of immediate post-operative bleeding P.V. which lasted for seven or more days in two cases; in the remaining cases it lasted for one to six days and was of a mild nature. Pus discharge through the incision made by the laparoscope was observed by eight respondents but was confirmed in three (2.8 per cent) cases only. In one case, prolapse of the omentum through the incision was observed and was treated

immediately.

The details of the first post-operative menses of the respondents as presented in Table 1 indicate that as many as 88 of the 109 respondents (80.7 per cent) had normal, complaint-free "first" menses by the third follow-up visit i.e. 24 to 25 months after the operation, the break-up being 43, 35 and 10 respondents at the first, second and third follow-up visits respectively.

While 50 respondents had begun to menstruate at the first visit, 55 had lactational amenorrhoea which continued in seven cases at the time of the second visit, but not the third. One of the four respondents who had neither menstruated nor had lactational amenorrhoea at the time of the first visit, and had a history of five weeks' amenorrhoea at the time of operation, delivered eight months later and was lactating at the time of the third visit; the other three established regular cycles four to six months post-operation.

Thus, while 80.7 per cent of the respondents had had a normal "first" menses after the operation, eight respondents (7.3 per cent) expressed complaints of oligomenorrhoea, seven (6.4 per cent) complained of profuse and/or prolonged bleeding and five (4.6 per cent) had dysmenorrhoea at the time of the first menses after the operation.

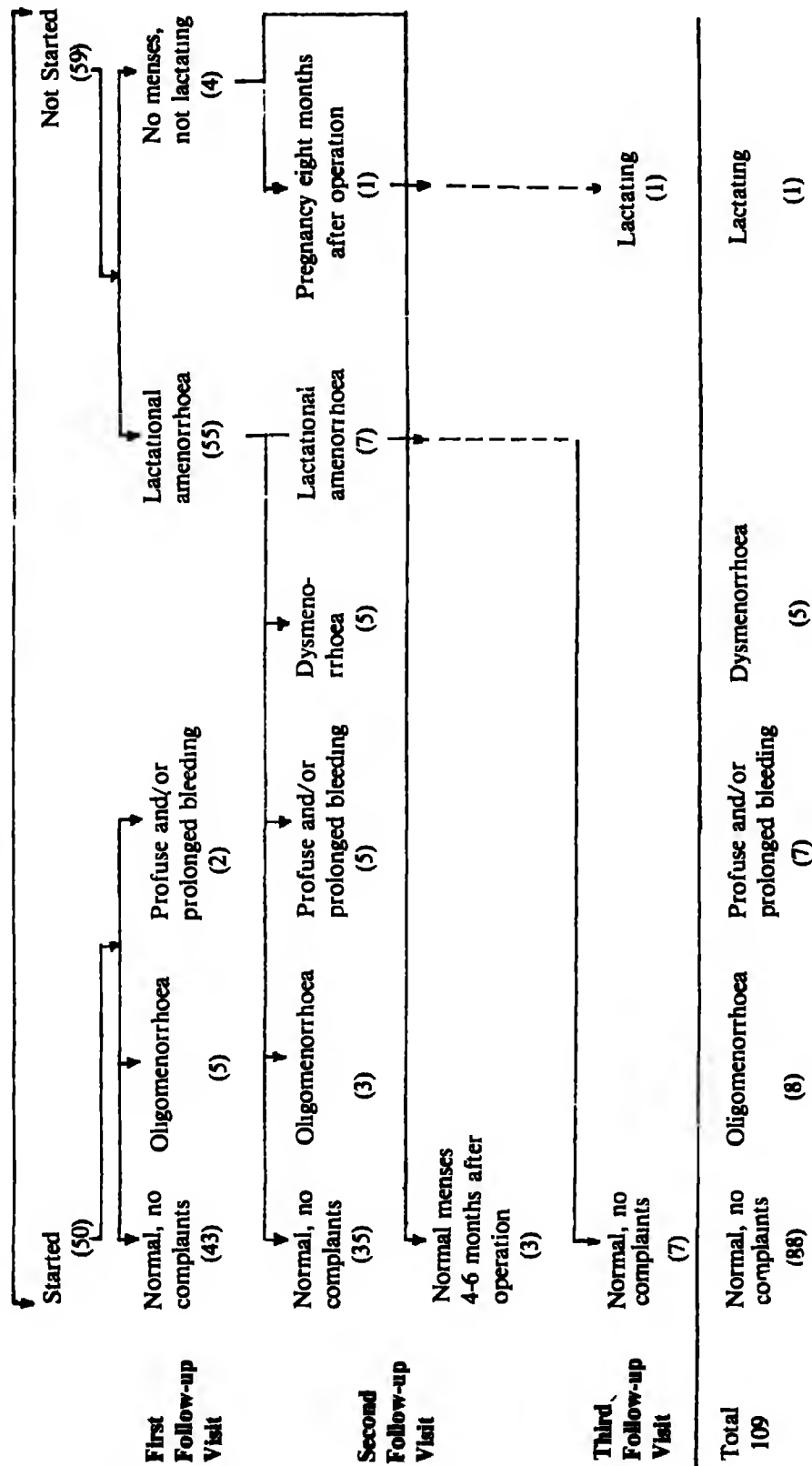
The results of the history of the menstrual cycle which immediately preceded the date of the follow-up visits, as presented in Table 2 indicate that dysmenorrhoea was the most common complaint made by 26 (23.8 per cent) respondents at the time of the second visit. This number decreased to two at the time of the third visit. History of scanty bleeding, profuse and/or prolonged bleeding was given by a few women at the time of each follow-up visit. However, the temporary nature of these complaints is evident from the fact that (i) none of

TABLE 2

History of menses immediately preceding the date of follow-up

Complaint	Time of follow-up after operation		
	6-8 weeks	12-13 months	24-25 months
Normal, no complaint	43	68	98
Dysmenorrhoea	Nil	26	2
Scanty bleeding	5	1	4
Profuse and/or prolonged bleeding	2	3	1
<b>No menses</b>			
Lactational amenorrhoea	55	8	1
Other	4	Nil	Nil
Lost to follow-up	Nil	3	3
<b>TOTAL</b>	<b>109</b>	<b>109</b>	<b>109</b>

TABLE 1  
Return of first menses after laparoscopic sterilisation



the respondents who had complained of oligomenorrhoea, dysmenorrhoea, profuse and/or prolonged bleeding at the time of the first and second follow-up visits expressed these complaints at the time of subsequent follow-up visits; (ii) none of the respondents who had these complaints at the time of the second or third visit had expressed them at the time of the previous follow-up visit; (iii) none of the respondents who had these complaints at the time of the first menses after the operation, complained about them at the time of subsequent visits.

Amenorrhoea lasting for three or more months during the inter-follow-up periods was found in 59 respondents at the second visit and one respondent at the third visit (the latter respondent had delivered a baby eight months after the operation and was lactating at the time of the third visit). Of these 59 respondents, 55 had begun to menstruate regularly by the time of the third follow-up visit, while in the remaining four cases, although regular menses had started four to six months after the operation, no history suggestive of abortion was obtained. No history of amenorrhoea of three or more months was obtained in any of the 50 cases who had started menstruating between the operation and the first follow-up visit. (Three women out of these fifty were, however, lost to follow-up at the time of the second or third visits). Thus, no evidence of pregnancy after laparoscopic sterilisation was observed in the 106 women during the period of observation.

### Discussion

The possibility of a pregnancy occurring after sterilisation, especially after laparoscopic tubal ligation, is a source of anxiety for both the surgeon as well as the patient. No case of failure was observed in this series after 212 women years of follow-up. A failure rate to the extent of 1.8 to 6.0 per 1000 operations has been reported by Thompson<sup>2</sup> and Shinde<sup>12</sup>. Pseudo-failures due to faulty selection of the patient as seen in one case in the present study can only be avoided by performing a pregnancy test in selected cases. The absence of failures in this study can be attributed to the small size of the sample and the relatively low risk of pregnancy after laparoscopic sterilisation. Considering the incidence of reports of failure, larger samples and longer periods of follow-up would be necessary to study failure rates.

No death due to laparoscopic sterilisation was observed in the present small series. Mortality has been reported to be around 8 per 100,000 operations,<sup>13,14</sup> the major causes of death being injury to major blood vessels by the trocar, air/embolism during the creation of pneumoperitoneum, cardio-pulmonary arrest, etc. Operations performed at mini-camps by experienced surgeons can minimise or prevent mortality.<sup>12</sup>

While menstrual complaints after tubal ligation by methods other than laparoscopic are known,<sup>15</sup> information regarding the return of menses after laparoscopic sterilisation as recorded in this study is a new aspect. Although complaints like oligomenorrhoea and profuse or prolonged bleeding at the time of the first menstrual period after operation have been reported, as also that

dysmenorrhoea is fairly common, the observations made during the inter-follow-up periods revealed that these complaints were of a temporary nature. In the absence of a control group it is difficult to relate these findings with those observed after laparoscopic sterilisation and more studies are indicated to confirm these findings. Immediate post-operative complications like rectus haematoma, vaginal bleeding and prolapse of omentum through the incision, are stated to be more common among women operated at mini-camps.<sup>12</sup> Vaginal bleeding lasting for seven or more days was observed in only two of our cases. The occurrence of local sepsis in 2.8 per cent of the cases is comparable to 1.6 per cent reported for mini-camps elsewhere.<sup>12</sup> However, the incidence of genital sepsis (7.4 per cent) was higher than that reported by Yoon et al<sup>2</sup> (0.2 per cent) and Shinde<sup>12</sup> (6.2 per cent).

### Summary

One hundred and nine cases of laparoscopic sterilisation performed at Paithan District, Aurangabad in 1981 were followed up for a period of two years. Vaginal bleeding was the most common immediate complication, while local and genital sepsis were observed as late complications. There appears to be some change in the menstrual pattern in a few cases, but these changes are temporary and more studies are indicated to confirm these findings.

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# **HOUSEHOLD STRUCTURE, WEANING PRACTICES AND HEALTH EDUCATION**

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## **Introduction**

Existing literature shows scattered inferences highlighting health education as one of the essential components of primary health care. However, it is regrettable that this component has almost been ignored in developing countries like India, where it is expected to play a much more expanded and critical role. Similar is the case with research in health education. Since health education does not work in a vacuum it has a crucial role to play in child-feeding care such as weaning practices.

Weaning is a process by which foods other than breast milk are introduced into the diet of the child, a process in which the household is expected to play a much greater role. Ogburn and Nimkoff<sup>1</sup> state that the family which is sometimes called a household not only consists of mates and their off-springs, but also of grand-parents, relatives and grand-children. Various social scientists<sup>2,4</sup> have reported the numerous structural and functional changes which are taking place in today's household pattern. Taylor<sup>5</sup> and Dube<sup>6</sup> have also observed that the grand-mother usually looks after the baby right from its birth. Taylor also adds that the bride's mother often instructs her daughter to become subservient in her new home, particularly to her mother-in-law. Such practices can be largely responsible for child-feeding differentials.

Ghai<sup>7</sup> and Cowan<sup>8</sup> have demonstrated that at the age of six months, the child needs to be started on semi-solid food. However, in our traditional households, these innovations are not likely to be considered as important to the health of the child. The present study addresses two vital questions: (i) what relationship exists between the type of household and the mother's opinion regarding the age at which semi-solid and solid foods should be introduced into the infant's diet, and (ii) how far can such a relationship be modified through health education?

## **Sample & Methodology**

The present study covered a sample of 300 children and their mothers, drawn by the stratified random sampling method, from two different sources: 100 children born in the Christian Medical College Hospital in Ludhiana, and 200 children drawn from among children born at home. The mothers of the former group of children were repeatedly exposed to health education regar-

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ding breast-feeding and scientifically recommended supplementary feeding practices, while the mothers of the latter group of children were deprived of any such health education. Both primary and secondary sources of data collection were used, a structured schedule constituted the primary source of data collection. The study universe was delimited to the city of Ludhiana.

In order to determine the impact of health education and the correlation between changing household structure and breast-feeding and supplementary feeding practices, the households of all the respondents were classified into three groups, viz nuclear, nuclear extended, and households with a complex structure as suggested by Gupta<sup>9</sup>. The basis used for categorising is given below:

1. Nuclear: husband + wife + children
2. Nuclear extended: husband + wife + children + mother with or without one or more sibling, and
3. Household with complex structure: husband + wife + children + grandfather and grand-mother, or brother(s) and his (their) wife (wives) with either of the parents.

Similarly, a socio-economic scale was prepared on the basis of the respondents' educational level, the economic level of the family and the occupational level of their husbands as documented by D'Souza,<sup>11</sup> and as shown in the Appendix.

## Results and Discussion

Table 1 indicates that in nuclear households about 47 per cent of the children were introduced to semi-solid foods by the age of six months. In nuclear extended households and those with a complex structure, the percentages were 32 and 27.5 respectively. Also, as compared to nuclear households, more

TABLE 1

Per cent distribution of respondents by household type and age at which semi-solid food was introduced in the infant's diet

Type of household	Age at introduction of semi-solid food					Total
	Within 16 weeks	17-24 weeks	25-32 weeks	33-40 weeks	41-48 weeks	
Nuclear	8.4	38.6	26.5	12.0	14.5	100.0(83)
Nuclear extended	—	31.8	31.8	18.2	18.2	100.0(22)
Household with complex structure	—	27.5	24.6	25.4	22.5	100.0(142)
Total	2.8 (7)	31.7 (78)	25.9 (64)	20.2 (50)	19.4 (48)	100.0 (247)

Figures in brackets denote the number of respondents.

respondents from the latter type of households introduced semi-solids at higher ages, thereby supporting the hypothesis that mothers from nuclear households have a greater tendency to include semi-solid foods into the diet of the child, than those from households with more complex structures. The differentials in the introduction of semi-solid foods between nuclear households and complex structured households were statistically significant as indicated by the  $X^2$  test ( $p < 0.05$ ), thus establishing the important role of household structure in child-weaning practices. These results are in conformity with those of Madan<sup>12</sup> and Kanti.<sup>13</sup>

The relationship between household structure and health education on the inclusion of semi-solid foods into the diet of the child was assessed by controlling the structure of the household and studying the association between the place of delivery and the age at introduction of semi-solid foods.

Table 2 shows that a higher percentage of mothers who delivered in hospital fed semi-solid foods to their children within five to eight months of age than those who delivered at home, and that exposure of the mother to health education decreased the negative effect of complex structured households which are usually more orthodox and traditional in regard to child-feeding practices. As evident from Table 2, among households with a complex structure only 42 per cent of home-born children were introduced to semi-solid foods between the age of four to eight months as against 81 per cent of their hospital-born counter-

TABLE 2

Per cent distribution of respondents by household type, place of delivery and age at introduction of semi-solid food to the infant

Type of household	Age at introduction of semi-solid foods					Place of delivery	
	Within 16 weeks	17-24 weeks	25-32 weeks	33-40 weeks	41-48 weeks	Home	Hospital
Nuclear							
Home	4.3	31.9	23.0	17.0	23.4	47	
Hospital	13.8	47.2	30.6	5.6	2.8		36
Nuclear extended							
Home	—	26.7	26.7	20.0	26.7	15	
Hospital	—	42.9	42.9	14.3	—	.	7
Household with complex structure							
Home	—	21.9	20.0	27.6	30.5	105	
Hospital		43.2	37.8	18.9	—		37
Total							
Home	1.2 (2)	25.1 (42)	21.6 (36)	23.9 (40)	28.2 (47)	100.0 (167)	
Hospital	6.3 (5)	45.0 (36)	35.0 (28)	12.5 (10)	1.2 (1)	100.0 (80)	

parts. These results which were statistically significant ( $p < 0.05$ ) support the hypothesis that health education minimises the negative influences of traditional households with a complex structure on the timely inclusion of semi-solid foods into the diet of the child. Table 2 also shows that very few respondents, who were exposed to health education, postponed the inclusion of semi-solids into the child's diet beyond the age of six months. These findings not only agree with earlier reports,<sup>9, 14</sup> but add to them.

Gupta<sup>9</sup> and Ghosh<sup>15</sup> also observed that the socio-economic level of the mother was positively related to the age at introduction of semi-solid foods. Therefore, the socio-economic level of the mother and the structure of the household were controlled to single out the impact of health education on the introduction of semi-solid foods to the child.

The results indicate that when the socio-economic level and the structure of the household are constant, the difference between home and hospital deliveries, in regard to the inclusion of semi-solid foods into the child's diet, witnessed different trends (Table 3). These differentials were more operative among mothers of higher socio-economic levels and those from nuclear households. This establishes that the influence of health education in the context of the timely inclusion of semi-solid foods into the diet of the child also depends upon the socio-economic level besides the structure of the household to which the mother belongs. These findings thus add to the observations of Cowan<sup>8</sup> and Ramakrishna.<sup>16</sup>

TABLE 3

Per cent distribution of respondents who introduced semi-solid foods by infant's sixth month, by socio-economic level, household structure and place of delivery

Household type	Low socio-economic level		High socio-economic level	
	Delivery at home	Delivery in hospital	Delivery at home	Delivery in hospital
Nuclear	25.6	36.0	33.3	52.9
Nuclear extended	25.0	33.3	33.3	42.0
Household with two or couples	13.8	22.2	27.3	35.0

The differentials between home and hospital deliveries have been determined by working out proportionate hospital deliveries.

It can be seen that when the socio-economic level of the mother and structure of the household are controlled, the impact of place of delivery can be easily recognised. These results are in agreement with the conclusions drawn by Winikoff.<sup>17</sup> Therefore, although the low socio-economic level of the

mother and the complex structure of the household are the negative correlates of early inclusion of semi-solid foods into the diet of the child, the mother's exposure to health education promotes the timely inclusion of semi-solid foods markedly.

### Suggestions

Health officials must be fully aware of the hurdles they are likely to face when dealing with families from different structural backgrounds. It is, therefore, suggested that health officials must be properly trained in health education skills before they are put on the job. In addition to a knowledge of the basic principles of health sciences they must possess the ability to feel the socio-cultural matrix affecting the feeding practices of children.

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### APPENDIX

#### Scale of Socio-economic Level

Educational level	Score	Economic level	Score	Occupational prestige categories	Score	Total scores	SEG
Graduate and above	100	Rs.1001 and above	100	I and II	100	300	I
Under-graduate	80	Rs.601-1000	80	III	80	240-299	II
Std. 9-10th	60	Rs.401-600	60	IV	60	180-239	III
Std. 6-8th	40	Rs.301-400	40	V	40	120-179	IV
Std. 5th and less	20	Rs.300 and less	20	VI and VII	20	60-119	V

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## **BOOK REVIEW**

### **PEOPLE'S PARTICIPATION IN FAMILY PLANNING**

*Author:* V A Pai Panandiker and Ajay K Mehra (ISBN:81-85024-10-3)

*Date of Publication :* 1987

*Publishers:* Uppal Publishing House, 3, Ansari Road, Daryaganj, New Delhi-110 002, India.

*Price :* Rs.160/-

Family Planning in India was launched as an official programme as early as 1952, with funds provided by the Centre and implementation being the responsibility of the States. But despite the early start, the programme has not made the required impact on fertility reduction and the programme itself is qualitatively weak though quantitative targets are set and probably achieved. This is because not only is the programme 'central', it has in the process become also 'centralised' and the absence of a 'well thoughtout programme of people's participation is a major gap in the policy conception'. The study by Pai Panandiker and Mehra is an attempt to fill this gap.

Family planning is for the 'family' and therefore requires the closest involvement of the people. The top-down approach of this 'centralised' programme sees the people as "the problem" and the technicians and bureaucrats as the "solution", while the opposite is the reality in the field. People's participation can be secured only by "putting people first" and "fitting the programme to people". The authors allude to the multi-dimensional aspect of people's participation and have studied the 'structure' and process' of people's participation through two models: the voluntary agencies and the panchayats.

Recognising that 'education' is the crucial ingredient of any participatory process, the authors have studied four voluntary agencies which use different grass-roots approaches. The 'acceptors' in the Family Planning Association of India projects; the 'village opinion leaders' in Gandhigram; the 'community health volunteers' in Vadu Project and the voluntary health workers in Jamkhed. The authors emphasize that while autonomous participation is desirable, it is not yet feasible in the socio-political context in India and rightly recommend a shift in public policy towards 'conscious mobilisation of the people. In their view, the elected panchayats and voluntary agencies are 'best' instruments of mobilisation. 'Social mobilisation' would indeed be successful if there are women's organisations at the grass-roots such as the Working Women's Forum (WWF) of Madras or the Self Employed Women's Association (SEWA) of Gujarat. Where such organisations do not exist (as in Bihar and Uttar Pradesh), the task of mobilisation becomes difficult. Two approaches may be necessary : to identify and cultivate informal local organisations or bring in the voluntary organisations with established reputation. In both these approaches, it would be necessary to start with income-generating schemes for the local people and gradually promote family planning acceptance among the-



beneficiaries. The unanswered question is whether given the socio-economic situation in rural India, people's participation in family planning can be secured directly without launching income-generating schemes to mobilise the rural poor who need the family planning services most.

This topical study by Pai Panandiker and Mehra and the participatory processes they have described provides material for 'experimental designs' with socio-economic inputs for increasing the acceptance rate among the rural poor. The book is a major contribution to the task of 'putting people first' in any new strategy formulation in family planning.

MR. V. K. RAMABHADRAN

### ANNOUNCEMENT

An International Colloquium on "Community Development and Industrialisation" will be organised by the International Association for Community Development (IACD) in collaboration with the Taiwan Provincial Department of Social Affairs in Taiwan, from 2nd to 7th November 1987 in Taipei, Taiwan, Republic of China.

The Colloquium which will consist of lectures on national and regional experiments in Third World countries, workshop sessions and field visits will cover the role of community development in industries; the improvement of community life through industrialisation; community development in an industrialising or industrialised society and in an urban industrialised area.

The working languages of the Colloquium are English-French (simultaneous translation). The participation fee including lunches is U.S.-250. For further information contact: IACD, 179, rue du Debarcadere, 60001 Marcerelle, Belgium.

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2. To assist wherever possible in the national programme of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature.
3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate.
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7. To foster and develop contacts with other organisations engaged in similar types of work in India and abroad

Clauses 8 to 18 deal with administrative and financial subjects

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# **UNMET NEED FOR CONTRACEPTION IN RURAL BANGLADESH : EVIDENCE FROM A MICRO STUDY**

**DR. M.KABIR +  
DR. K.M. ELAHI\*  
and  
DR. M. MOSLEHUDDIN\*\***

## **Introduction**

When formulating targets of fertility decline and contraceptive use, programme planners and policy makers have at least a rough notion of the potential demand for contraceptives in the country. While setting targets in Bangladesh, planners assumed the existence of a large unfulfilled demand for family planning services. Thus, the government's third Five-Year Plan (1985-90) set as its target, a reduction of the crude birth rate from 39 to 31 per thousand population. The Plan assumes the existence of a considerable unmet demand for contraceptive services and envisages an increase in the current contraceptive use rate from 25 per cent in 1985 to 40 per cent in 1990. The concept of unmet need as used here relates only to women who intend not to have any more births and are not using contraception. It does not however, include the great potential demand for contraception for spacing purposes.

The concept of unmet demand for contraception has gained importance following the World Fertility Surveys (WFS) and more recently, the Contraceptive Prevalence Surveys (CPS). Using WFS data, Mitra and Pebley<sup>1</sup> estimated that the extent of unmet need for contraception ranged from 24.6 per cent to 36.9 per cent. Recently, Khuda and Howlader<sup>2</sup> using the 1983 CPS data estimated an unmet contraceptive need which varied from a low of 26.8 per cent to 37.0 per cent. This suggests that between 1975 and 1983 there has been little change in the unmet need for contraception although the contraceptive use rate has almost doubled during this period. In a country like Bangladesh where more than 50 per cent of the currently married women say that they want no more children and only a small proportion is using contraception, these two variables can be thought of as offsetting as well as interacting with each other. As the practice of contraception increases, the demand for it also increases in the form of growing proportions who want no more children. That is, the more the norm of contraceptive practice grows, the more the overall need increases, leaving the unmet need relatively static.<sup>3</sup>

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The major objectives of the country's Third Plan are first to create such demand by changing the attitudes of couples towards family size and contraceptive practice, and then to meet the demand. The new targets for fertility decline have been formulated in the light of this approach.

The objective of this paper is to evaluate the existing level of latent demand or unmet need for contraception in the study population, in the hope that a relatively accurate estimate of the unmet need will enable planners to formulate more realistic targets. Such information will be helpful to the management in planning and administering the programme.

The proportion of unmet need in a country may be defined in broad terms or in a rather conservative manner. On the one hand, one may assume that all women who are not using a method but who state that they do not want more children have an unmet need for contraceptive services. Alternatively, one may consider such additional factors as the desired family size of these women and their exposure to the risk of conception<sup>4</sup>.

Following Westoff and Pebley's<sup>4</sup> definition, two estimates of unmet need can be calculated by including various sub-groups of women in the unmet need group, and investigating demographic and socio-economic differentials in the measure. One of the limitations of the concept of unmet need is that the unmet need group includes only women who want to end child-bearing. While it is likely that a large proportion of women need contraceptive services for birth spacing rather than for family limitation, whether such a need exists cannot be determined for Bangladesh because of lack of relevant information. However, the unmet need would be higher if estimates of intentions to delay child-bearing were available for women who wanted more children. Unmet need will be low if contraceptive prevalence is high. Thus, unmet need is affected by the joint effects of these two variables which may offset each other. If all women wanted more children, there would be zero unmet need. On the other hand, if all women wanted no more children, and all of them were practising contraception, there would be zero unmet need.

### **Data**

The data for this study were collected from a Rural Fertility and Female Economic Activity Survey carried out in 1984. About 618 ever-married women were interviewed following the stratification of households of each selected village. Stratification of the landholding categories included were: 'big' farmers, 'medium' farmers, 'small' farmers and landless (including marginal) farmers. A 10 per cent sample in proportion to the households in each stratum was then randomly selected for detailed individual interviews. The survey methodology has been described in more detail elsewhere.<sup>5</sup>

### **Results**

Changes in the fertility behaviour of women and in most cases, the concomitant changes in their attitudes towards family size, family limitation and work activity are frequently related to socio-demographic factors. For instance,

# UNMET CONTRACEPTIVE NEED

there is a negative relationship between educational attainment and the level of fertility. Thus, the socio-demographic characteristics of the respondents were analysed in this context.

## *Socio-demographic Characteristics*

In societies where the use of contraception is limited, the higher the percentage of women in the most fertile group, the higher is the probability that the number of births during a given period in that population would be higher than in a population with a smaller percentage of women in those age groups.

TABLE 1

Socio-demographic characteristics of respondents

Characteristics	Landholding categories				
	Landless/ marginal farmers	Small farmers	Middle farmers	Big farmers	All
<i>Age (Years)</i>					
<20	10.2	6.8	3.6	1.7	7.1
20-24	18.5	7.5	5.1	3.4	11.5
25-29	16.4	13.0	9.4	6.8	13.1
30-34	10.5	14.4	15.2	8.5	12.3
35-39	11.6	16.4	14.5	23.6	14.6
40-44	10.9	14.4	9.5	10.2	11.3
45-49	7.6	6.3	12.3	15.3	9.1
50+	14.2	21.2	30.4	30.5	21.0
Mean	34.0	37.5	40.6	42.2	37.1
N	275	146	138	59	618
<i>Marital status</i>					
Currently married	90.9	89.7	85.5	89.8	89.3
Widowed	8.7	10.3	14.5	10.2	10.5
Divorced/separated	0.4	—	—	—	0.2
<i>Education (wife)</i>					
Nil	81.8	78.8	66.7	54.2	75.1
Class 1-3	7.3	5.5	13.0	15.3	8.9
Class 4-6	9.1	14.4	16.7	25.4	13.6
Class 7+	1.8	1.3	3.6	5.1	2.4
Mean	0.8	0.9	1.4	2.0	1.1

Table I shows the percentage distribution of the respondents by their current age for the four landholding categories. It is evident that a large majority of the women, except the landless, were older. The average age of the respondents varied from a low of 34.0 years for the landless and marginal farmers to a high of 42.2 years for 'big' farmers. Similarly, over 89 per cent of the respondents were currently married. The information also indicated that marital disruption among the ever-married women was high, as also the overall

incidence of widowhood among the 'middle' farmer category, accounting for about 14.5 per cent.

Education significantly affects fertility and the use of contraception. Table 1 also shows that the landless and marginal farmer groups contained the highest percentage of women (81.8 per cent) who had not received any education, followed by the 'small' farmer group (78.8 per cent). The 'big' farmer group had the highest proportion of respondents at all educational levels.

### *Level of Unmet Need*

A little over 15 per cent of the currently married women of reproductive age reported the use of contraception at the time of the survey. Because of the low level of current use in the study population, one would expect a sizeable unmet need for family planning services. Among non-users, those who said that they intended to use contraception in the future, constituted a group of potential users with favourable attitudes towards family planning, who would be likely to become users if availability of services and supplies were ensured.

Different combinations of exposure and attitudinal criteria yield different levels of unmet need. In our study, we first classified women in the unmet need category according to whether or not they wanted any more children and secondly, as those currently at risk, if they were not pregnant and not using contraceptives. Under the second definition the woman was also classified as infecund if she believed that she and her husband were unable to have another child. When the second definition was used, a somewhat larger proportion of women are treated as infecund and therefore get excluded from the unmet need group.

Among all women who did not want additional children (regardless of whether they expressed the intention to use a method), about 32 per cent were in the unmet need group in the present study, as compared to 37 per cent in the 1983 CPS. When controls were introduced for infecundity and pregnancy, the proportion of women in the unmet need group were almost the same in the present study and the 1983 CPS (25.5 as against 26.8). This estimate of unmet need should be viewed with caution because it does not include those women who want to use contraception for spacing purposes and those who want to use contraception in the future.

The two important conclusions drawn from the above findings are, first, that the levels of unmet need are not exceptionally different in the two surveys and, second, that a comparison of these measures from different data sources is not a simple matter. Because of differences in the value of variables that enter the calculation of unmet need, the results are difficult to interpret. It is also not clear whether the differences in basic variables (e.g. fecundity) between the two surveys are real differences or simply the result of differences of measurement.

Focussing on the values of the various unmet need measures based on each data source we find that the percentage of women in the unmet need group becomes progressively smaller as more constraints are introduced into the definition of unmet need. One could argue that more restrictive definitions of unmet

need are more realistic for a country like Bangladesh. In the 1983 CPS only a little over 19 per cent of the married women reported current use of a method and only 33.4 per cent reported ever-use. The difference between the present estimate and the national estimate may be attributed to the fact that the national estimate is a weighted estimate of urban and rural samples while the present estimate is based on a rural sample. The results suggest that if demand for contraception is defined only as not wanting another child, such a definition may overstate the actual level of need. Our maximum estimate of 32 per cent is highly unrealistic given the dubious quality of data.

### *Demographic and Socio-economic Differentials*

Table 2 presents the levels of unmet need for various demographic and socio-economic characteristics. The percentage of women in the unmet need group was consistently higher among those aged 30 and above than among those below 30, as expected. Among women aged 40-44, however, the level of unmet need dropped sharply, the reason for which is difficult to establish.

The proportion of women in the unmet need group was also consistently higher at higher parities. Thus, among women with four or more living children, over 28 per cent were in the unmet need group as compared to only 4 per cent among those who had only one living child. This differential is mainly a result of the lack of desire for another child among those with four or more children. The difference in the risk status between the two groups was substantial (25 per cent and 38 per cent at risk). It seems reasonable to infer that such women would be more favourably inclined towards contraception and a large proportion not already using a method might use one if it were easily available and acceptable.

Differences in unmet need by open birth intervals were considerable. For example, women with shorter birth intervals had higher unmet needs than women with longer birth intervals. When the wife's education was considered, a rather unexpected pattern was observed in that fewer more highly educated women (above primary level) belonged to the unmet need group, than less educated and uneducated women. The differential was due to the fact that a larger percentage of the more educated were current users and thus were excluded from the unmet need group. This finding suggests a spurious relationship between education and unmet need. The more educated women in Bangladesh are likely to be younger and at lower parities. By controlling these demographic factors it is possible to derive a reasonable estimate of the unmet need within certain sub-groups of the population. Large differences in unmet need existed when the respondents were stratified by landholding; the percentages varying from a low of 15 per cent for the 'big' farmer category to twice this value for the 'middle' farmer category. This differential was probably a result of the differences in pregnancy risk status. For instance, the contraceptive use rates between the above-mentioned two groups were 10.1 per cent and 28.4 per cent respectively.

TABLE 2

Percentage distribution of currently married women (15-49 years) by exposure to risk of conception, contraceptive use and desire for more children, according to demographic and socio-economic characteristics

Characteristics	Currently married			Currently at risk			All
	Do not want more children	Using contraception	Not using contraception	Do not want more children	Using contraception	Not using contraception	
<i>Age (Years)</i>							
< 20							44
20-24	29.6	15.5	14.1	15.5	4.3	11.3	71
25-29	59.0	39.7	19.2	29.5	10.3	19.2	78
30-34	76.0	38.7	37.3	45.3	17.3	28.0	75
35-39	78.8	38.8	40.0	42.4	9.4	32.9	85
40-44	78.3	35.0	43.3	45.0	13.4	31.6	60
45-49	82.0	16.0	66.0	58.0	4.0	54.0	50
Total	60.3	28.7	31.5	51.9	9.5	25.5	463
<i>Number of living children</i>							
0							34
1	12.0	4.0	8.0	8.0	4.0	4.0	50
2	44.7	21.2	23.5	24.7	8.2	16.5	85
3	61.9	39.3	15.5	32.1	8.3	23.8	84
4	69.7	32.3	37.4	40.4	12.1	28.3	99
5	62.4	34.1	28.2	36.5	12.9	23.5	85
6	74.5	33.3	41.2	35.3	5.9	29.4	51
7+	53.8	11.5	42.3	40.4	3.8	36.5	52
Total	52.6	25.2	27.4	30.0	8.1	21.9	540
<i>Open birth interval (months)</i>							
< 12	45.3	15.6	29.7	31.2	4.7	26.6	64
12-23	56.3	21.9	34.4	39.1	6.2	32.8	64
24-35	45.2	24.7	20.5	20.6	5.5	15.1	73
36-47	63.0	37.0	25.9	33.4	14.8	18.5	54
48+	63.1	45.6	17.4	31.6	3.1	22.4	241
No response				18.2	6.8	11.4	44
Total	52.6	25.2	27.4	30.0	8.1	21.9	540
<i>Education (wife)</i>							
Nil	49.1	24.7	24.4	27.5	7.1	20.4	393
Class 1-3	52.3	19.0	33.3	28.5	9.5	19.0	42
Class 4-6	67.5	27.5	40.0	43.7	11.2	32.5	80
Class 7+	60.0	36.0	24.0	28.0	12.0	16.0	25
Total	52.6	25.2	27.4	30.0	8.1	21.9	540
<i>Landholding status</i>							
Landless	51.8	29.0	22.9	28.6	8.6	20.0	245
Small Farmer	46.4	21.6	24.8	27.2	12.7	14.5	125
Middle Farmer	57.0	17.5	39.5	36.8	7.0	29.8	114
Big farmer	60.7	32.1	28.6	28.6	13.7	14.9	56

## Discussion and Conclusion

The measurement of the potential demand for contraception is of considerable practical importance because it influences the commitment of resources to family planning programmes and the operation of those programmes. The term 'unmet need' denotes a portion of the total potential demand for contraception that the programme needs to satisfy. The focus on potential demand has also stimulated research into explaining the apparent discrepancy between the high proportion of couples who say that they want no more children and the relatively low proportion practising contraception. Available information suggests that although there is a large unmet need the use of contraception is very low. This discrepancy between preferences and contraceptive use calls for investigation and redirection of programme efforts.

Considering the substantial percentage of women wanting no more children and not using contraception, there seems to be a considerable unmet need for family planning services. The concept of unmet need as used here relates only to women who intend to have no more births and are not using contraception; it does not, as we noted, include the great potential demand for contraception for spacing purposes. In a society like Bangladesh where women have no say and have no status in the family building process, the responses of the wives that they want no more children, have no practical relevance. The question remains whether their husbands want no more children. Thus, consistency in the preferences of both husband and wife is required before such preferences are translated into demand for family planning services.

Khan et al.<sup>6</sup> found in an Indian village study that none of the women respondents were ever consulted by their husbands in the matter of having sex. It was always the decision of the husband which forced a woman to have sex with him even when she was not desirous. Lack of communication between the husband and wife on this aspect plays a crucial role in deciding whether to have more children or not and also in accepting family planning and limiting family size. Women play a very small role in such decision-making processes.

There is another component built into the definition of unmet need which is that a person may not be contracepting due to the lack of availability of family planning services. As a matter of fact, a person may be both (i) not wanting any more children in future, and (ii) not contracepting not because family planning services are not available but because of other constraints such as the fear of side effects, religiosity, etc.<sup>8</sup> Khan et al.<sup>6</sup> attempted to understand the reasons for non-use of family planning by those women who do not want to have any more children. The important reasons as reported by them were lack of husband's consent followed by religious faith, fear of side-effects, and lack of knowledge about the use of any family planning method. This indicates that although universality of knowledge has been achieved in respect of family planning methods, knowledge about the correct use of the method was vague and full of misconceptions. Thus, several factors such as socio-cultural barriers, religious objections, rumours about health problems, non-availability of supplies and services, physical distance, lack of adequate knowledge about its use,

husband's objections etc. could be responsible for this gap between expressed need and demonstrated demand for contraception. There may also be some real reasons which may give rise to this wide differential between knowledge and practice. For instance, to translate one's knowledge into practice, one needs to have an easy access to methods of contraception and an effective knowledge of how to use them. To know a method is not enough for acceptance of family planning. There are a number of factors which govern one's behaviour with respect to contraceptive practice. These may include programmatic factors, such as availability of methods, insufficient motivation to terminate child-bearing, irregular follow up of acceptors, unfavourable experiences with family planning personnel, and his/her own aspirations about family size.

Although the concept of unmet need for contraception is simple, there are practical difficulties in its measurement. Identification of the infecund and the pregnant, the duration of contraceptive protection afforded by breast-feeding, and the women who want to prevent and space future pregnancies is problematic in the measurement of potential demand. Although the values of these measures are subject to the discretion of the researcher, the inclusion of all rather than arbitrary groups of fecund women in the computation, removes their numbers from the estimates of unmet need. The question about whether additional children are wanted is even more controversial and has been subjected to a great deal of methodological criticism. One problem is that the question is not followed up by any probe into the certainty of that intention.

At present we do not have adequate knowledge about the relative importance of the different factors causing the existing gap between contraceptive need and its practice. Further investigations are required to identify these factors and to determine the precise contribution of each of them. This would help to modify programme strategies for effective implementation of the programme.

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# **THE ADOLESCENT IN INDIA : A STATUS REPORT\***

**DR.A.G. SATHE +**

## **Introduction**

The recent decadal census of March 1981 shows an alarming rise in India's population—683.8 million which is nearly 12 million more than the projected figure. It also indicates a doubling of the population since independence. Nearly 60 per cent of the total population is below 25 years of age with 20 per cent being in the 14-24 age group. This is the most vital, potent and major component of the population—that which represents the country's future. This segment is not adequately provided with opportunities for education and self-development. Amongst this age group, the sex ratio is still in favour of the male. The general literacy rate is 36.2 per cent. It is surprising to note that eight out of every ten children joining school, discontinue their education before they enter their teens. Thus, large sections of our population comprising of school drop-outs have no access to educational facilities of any kind. Twenty out of every hundred children, on having reached the age of five, do not get enrolled in school and two-thirds of these non-entrants happen to be girls. One cannot ascribe this state of affairs to the population factor alone. It is also linked to socio-economic and other factors.

Indian society is patriarchal in nature and in more than 98 per cent of the population, the joint family system is the norm. About 80 per cent of the Indian population lives in rural areas where strong cultural mores, traditions, beliefs and superstitions influence social and sexual behavioural patterns. The head of the family controls the total well-being of the family and dictates the 'Do's' and 'Don'ts'. No other family member has any say in family matters.

Such an environment does not help the younger generation to become self-reliant and responsible and hence they never develop the skills of decision-making. Most girls never experience the pleasures or fears of adolescence, being thrown straight into marriage and motherhood. A large number of adolescent girls do not get any type of formal education. Naturally, in such a set-up these adolescents are not likely to develop scientific attitudes towards problems of family life and fertility.

Nearly all marriages in India are arranged marriages. There is hardly any scope for love-making or courtship as the society is divided into two distinct sectors—one comprising of males and the other, of females. This is more true in the villages. Love and choice marriages are exceptions. Selection of the spouse is done by the elders in the family, and within the same caste or sub-caste.

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However, in large cities this trend is slowly changing. The dowry system still has a strong hold on Indian society and the mean age at marriage of girls is 17.23 years.

The Constitution of India has provided several avenues for the improvement of the status of women, but age-old traditions and socio-cultural pressures come in the way of altering the present status. Unless a special, sincere and serious attempt is made to bring in the necessary changes in the attitudes and values of the people, it will be difficult to improve women's status merely through legislature.

### **The Rural, Adolescent Female**

The rural adolescent girl is usually illiterate or is a school drop-out. She does not face any problems of adolescence as she is married around the time of puberty and passes on to motherhood. She has no scope for pre-marital sexual experiences, as there is a great stigma attached to the loss of virginity thus compelling parents to marry their daughters off around puberty. Again, there is a great social and family pressure on the adolescent couple to prove their fertility within a year of marriage. Fertility control is not left to the choice of the couple since the rearing of the child is considered as a family responsibility. The adolescent (married) mother has at least two children by the time she is 20. Control of fertility is not at all acceptable to the family till the couple has had at least two living sons (Table 1).

TABLE 1  
Age Specific Marital Fertility Rates (1978)

Age-group	Rural	Urban
15-19	181.1	192.2
20-24	287.6	283.2
25-29	255.8	214.0
30-34	177.6	141.9
35-39	124.4	76.4

Adolescent mothers face a number of medico-social problems such as a high incidence of anaemia, toxæmia and premature and difficult labour. Further, there is a high incidence of infant mortality among young mothers as also premature births, more so among the uneducated (Table 2). And yet, the adolescent, wed, mother is a common entity in India; there were 23 and 35 young mothers per thousand population in the age groups 15-19 and 20-24 years respectively in 1971.

The Government of India has prescribed the minimum age at marriage as 18 years for a girl and 21 years for a boy. However, young people continue to enter marriage at earlier ages, though the age at marriage for both sexes has risen appreciably over the last few decades. Among boys, the mean age at marriage is 21.56 (rural) and 24.32 (urban). In the rural areas, comprising nearly 80 per cent of the total population, a girl gets married around the time she at-

tains puberty due to family and social pressures, the mean age at marriage being 16.67 years, while in urban areas where nearly 20 per cent of the total population lives, girls are married off at a mean age of 19-22 years. In the rural areas of certain states however, girls continue to be married off around 13 to 15 years of age. Child marriages still exist, especially on a large scale in remote, backward villages and among 60 per cent of the tribal population.

TABLE 2

Infant mortality rate and mother's age at marriage

Age at marriage (Years)	Infant mortality rate	
	Rural	Urban
Below 18 years	141	78
18-20 years	112	66
21 years and above	85	46

There is not even a remote possibility of late marriages unless the present social norms are changed through education. However, some relief could be extended to these young mothers if the elder members of the family are convinced about the hazards of early and repeated pregnancies to their health and life. This change in attitude could probably help in the postponement of at least the second pregnancy among these young mothers.

### The Rural, Adolescent Male

A majority of the boys in the villages are semi-literate or school drop-outs. They work all day on the farm with their elders and hardly have any chance to move in a mixed society. The only mass media they are exposed to is the Hindi film which is quite provocative as regards sex and violence. They do have an idea of romantic life which is many a times expressed in village dramas (Tamasha). Some of the sons of rich farmers may also have had sexual experiences, usually with a married woman or a servant. The boys in the villages do not go to brothels for fear of being identified. Their marriages are settled at an early age, around 18-21 years. If a boy gets an opportunity to go to a large city either on a business trip or for higher education he moves into a different set-up, away from his family and village life. Here he is free from his family's supervision and control as also from the fear of being identified. He feels bewildered and lost in the glamorous atmosphere of the city and takes to sexual pleasure. If he is surrounded by his peers, this works on him and he is tempted to visit a brothel, unaware of running the risk of contacting venereal diseases. Subsequently, during his visits home, he tries to repeat his sexual activities with the girls in the neighbourhood. He is reluctant to use contraceptives either due to ignorance or indifference.

### **The Urban, Adolescent Female**

Most urban girls are literate though many are school drop-outs and only a very few continue upto the college level. Of the latter, even fewer are career-oriented. Higher education is just a means to get a husband with a better living standard. Most girls are married by the time they are 16 years of age. Adolescent girls from large cities like to dress up well, look attractive and occasionally, provocative too. They hardly get any scientific information about menstruation and they have their myths and misconceptions about sexual intercourse, pregnancy and child birth. These girls would like to move freely in a mixed society but are afraid to go out alone with a friend of the opposite sex, while they are not scared of group friendships. They also completely depend on their relatives for the selection of a life partner. The dowry system weighs heavily on them. Some under-privileged girls take up jobs and are likely to be victimised by the opposite sex either for pleasure or for monetary gains. Some have to marry late, especially those belonging to the middle class, due to various socio-economic reasons. Late marriage leads to suppression of natural sexual urges which may have adverse effects on the personality.

A few urban girls from fashionable circles indulge in pre-marital sex but the number is very negligible as compared to the total population. None of the girls, rural or urban, like to continue an unwanted pregnancy as the unwed mother is not socially accepted. Moreover, an illegitimate pregnancy also affects the girl's future prospects of marriage. When abortion is not possible due to various reasons, secrecy is preserved and the child is either abandoned or infanticide may be resorted to.

### **The Urban, Adolescent Male**

Urban, male adolescent youth usually do not enter college, but try to take up some employment to help their parents and later get married. Marriage for those who go in for higher education is postponed to over 24 years or so. All these boys are exposed to sexually stimulating and provocative mass media and have easy access to pornographic literature. They have no scientific knowledge about their sexual development and have myths and misconceptions about their sexuality. Most of them are worried about masturbation, night dreams, the development of physical secondary sexual characteristics and virility and have no access to scientific information. They get their information from available unscientific literature or from their peers. Only a few in the metropolitan cities take to pre-marital sex and most of them are ignorant about venereal diseases. Pre-marital sexual experiments with a close relative or with call girls is definitely on the increase, but as compared to the total population, this number is negligible. Serious cognition of this trend is to be taken as it is likely to spread under the influence of provocative mass media and due to problems of growing urbanisation and industrialisation. Socio-economic conditions have led to late marriages in urban areas which, in turn, have led to an increase in social, psychological, marital and sexuality problems.

### **Some Reproductive Health Problems Among Adolescents**

All over the world, the incidence of sexually transmitted diseases (STD) is on the rise especially among youngsters. No reliable statistical evidence is available as most of the cases do not go to a hospital and therefore go unrecorded. (Only five out of every hundred cases go to general hospitals). In spite of diagnostic and therapeutic advances, the cure rate is very low due to many obvious reasons, a major factor being ignorance about the nature and consequences of the disease.

In spite of the liberalisation and legalisation of abortion (through the Medical Termination of Pregnancy or MTP Act of 1971) a very large proportion of the abortions continue to be performed by quacks and dais and very few go to trained, medical persons for an abortion. The last five years have witnessed an increasing demand for MTP at least in towns, cities and the metropolitan areas. The incidence of abortion in the 15-19 age group is negligible. Though recorded as married family planning acceptors, this group is likely to comprise of unmarried adolescents. Normally, married couples belonging to the 15-19 age group do not resort to abortion, because of social and family conditions and/or pressures. The child is supposed to belong to the entire joint family and not only to the couple as such. This implies that the elders have a great say in this matter which means that the couple has to have the child and just cannot consider having an abortion. The 20-24 age group shows a high incidence of abortion. These are usually urban mothers of two to three children, who have begun to realise the importance of a small family.

### **A Few Observations Regarding Adolescent Sex**

*The attitude of males towards pre-marital sex* can be summarised as follows:

1. Understanding of sexual relationships is generally limited to physical contact.
2. They are concerned with their physical ability to perform sexual intercourse and try to confirm their virility through pre-marital sexual experiences.
3. They have fleeting and clandestine ideas of sexual behaviour.
4. They are interested in knowing about a 'one shot', preventive or curative method for venereal disease so that they need not avoid sexual intercourse.
5. They are inconsiderate towards the opposite sex as regards the consequences of sexual intercourse.

*The attitude of females towards pre-marital sex* can be summarised as:

1. Despite their natural attraction for the opposite sex, women appear somewhat reticent in their behaviour towards men.
2. They are afraid of the social stigma, of marring their good name and of the adverse effects on the prospects of their marriage.
3. They fear an unwanted pregnancy.
4. Few do not bother about the various consequences.
5. They do not know how to say 'No'.
6. They are afraid of losing their lover if physical contact is denied.

*The likely psycho-social and sexual repercussions of pre-marital sex are:*

1. Unwanted pregnancies.
2. Unwanted teenage marriages.
3. Divorces.
4. Abortions.
5. Venereal diseases.
6. Development of guilt complexes.
7. Development of sexual inadequacies
8. Fear of development of pleural hatred towards the opposite sex.

*Why is pre-marital sex on the increase? The reasons are:*

1. The changing pattern of social and family life due to industrialisation and urbanisation.
2. Prevalence of a sex-saturated society in which various modes of entertainment, advertising methods and mass media of communication, exploit the natural biological sexual-urge.
3. Late marriages.
4. Easy availability of pornographic materials.
5. Increasing permissiveness in various aspects of life, in general.
6. Open talk leading to an increase in what is revealed and known.

*Why are contraceptives not used by teenagers? This is due to:*

1. Ignorance of human reproduction, contraception and intercourse.
2. Contraception is considered artificial, unnatural and as an interference with the spontaneity of love-making.
3. It is felt that conception does not occur with every act (chance theory).
4. The young girl feels, "If I refuse, he will think I am not really in love."
5. Hostility towards the opposite sex.
6. Young people feel that sex is more romantic without contraceptives, a sign of true love.
7. Lack of know-how regarding contraception.

*Venereal disease is on the increase because of:*

1. Lack of knowledge about venereal diseases.
2. Young people feel that call girls or their friends do not transmit venereal diseases, they are too good.
3. Self-treatment or inadequate treatment.
4. The belief that complete therapy is not possible because of toxic reactions.
5. Resistant strains of infection.
6. The social environment.

### **Projects and programmes conducted by the government and non-governmental organisations**

The Family Planning Association of India (FPAI) recognised the need for population, family life and sex education programmes for the younger

generation—the parents of the future—as early as in 1969, when it conducted a seminar on Population Education for educationists and representatives of governmental and non-governmental agencies. In 1971, at its All India Conference, the FPAI President, Mrs. Avabai B. Wadia, presented a blue-print for action in this very vital educational movement for developing responsible attitudes among the younger generation. The Government is still not clear about its views on introducing family life education in the formal school sector. It is only the FPAI and, more recently, a catholic institution (CREST) who are conducting Family Life Education and Sex Education courses for school children and college youth. FPAI also provides these courses both short and long-term—to non-formal youth.

The Headquarters and 38 Branch units of FPAI cover thousands of school and non-school children annually, through a wide variety of approaches, supplemented by audio-visual aids. These are followed by drawing and painting competitions, essay-writing, elocution, debates etc. which help sustain interest and also allow for programme evaluation.

A wide range of colleges and higher educational institutions are also reached and professional colleges such as those of agriculture, ayurved, pharmacy and degree colleges are covered through lectures, group discussions, seminars, debates, film-shows etc. on population and family life education. Resistance, if any, on the part of elders or of the youth themselves is successfully overcome, by respecting parental beliefs and attitudes and countering them by accurate, scientific information imparted in a sensitive and responsible manner.

Educational and orientation programmes for college students of the National Service Scheme (NSS) as also NSS Co-ordinators are regularly conducted at youth camps and youth rallies, thereby spreading the message of child welfare, health, nutrition and afforestation along with responsible parenthood through these rural out-reach programmes. The NSS continues to play an important role in this sector, principally because of its potential for reaching out to village communities.

FPAI has established and sponsored Population Studies Cells in several universities in which Population Education is disseminated among University students, by way of various educational activities organised by Population Education Clubs established in affiliated colleges as also through foundation courses and community extension work.

Sensitisation of teachers to the need for population and family life education and its conceptualisation has been increasingly claiming the attention of FPAI since the official school population education programme was launched in 1980. Training of workers of other youth-serving institutions and social welfare organisations is also conducted. A more recent activity involves the organisation of workshops organised for trainers working for youth wherein orientation in family life education is given and problems of adolescent fertility are discussed.

Programmes for out-of-school youth cover population, environment, development and family life education programmes (short and long-term courses) for urban and rural school drop-outs and illiterate youth through a

variety of non-formal approaches. Industrial workers, blind and destitute children are also covered at the request of the concerned welfare agency. A family life education project for school-going, adolescent girls introduced in twenty schools in Pune has so far orientated nearly 4,000 adolescent girls. Youth club projects which seek to provide population and family life education and skills training courses for income-generation, to economically and socially backward young men and women in semi-rural areas are another means of exposing young underprivileged people to gain self-confidence, build up economic self-reliance as well as responsible attitudes.

Since the last five years, Sex Education Counselling Research and Training Centres (SECRCT) have been started to provide much-needed counselling services for marital and sexual problems, which are increasingly surfacing in large cities where rapid industrialisation and urbanisation is leading to a breakdown of age-old value systems.

Urban youth face a very difficult situation such as late marriages, lack of job opportunities, lack of accommodation, free mixing of sexes and sex-centred mass media. This has changed their life style. This segment of the population feels emotionally insecure. This leads to depressive and/or anxiety states of mind and, in many cases, to the development of aggressive, irrational and irresponsible attitudes. The incidence of teenage pregnancy, STD, rape and addiction, is definitely on the increase. The young rural population will meet with the same fate; the day is not too far since even remote places now have access to videotapes and are becoming aware of the outside world.

Government policy makers and marketing experts who control and monitor various mass media like the television, advertisements, and entertainment programmes cannot do much to solve these problems as this is viewed as a politico-economic game. It is up to us to take the youth into confidence, to involve them in the programme and to meet their needs. It is very essential to identify and analyse the needs and problems of young people in the present context, through various field surveys in different parts of the country—urban, semi-urban and rural.

Each community must identify and analyse its own needs and develop its own plans, resource persons and resource materials, which will not only suit its own local population but will also reflect and respect its culture. It must and social pressures which, if perpetuated, could jeopardise the stability and progress of the nation.

Population, family life and sex education programmes are an urgent need of both school and out-of-school youth. Youth service and counselling centres should be established in all parts of the country, even in rural areas, through which proper guidance can be made available to young people, even those living in remote areas. Health and educational facilities, job opportunities, accommodation, emotional and economic security for youth should receive priority in Government development schemes.

A number of voluntary youth and women's organisations which do not have any linkage or connection with political parties should be established, promoted and encouraged. These organisations will work for the youth and for

society. For carrying out such an immense and responsible task, one cannot depend completely on the Government. Many more voluntary organisations like the FPAI should come forward to share this responsibility. The solution is not simple and need not be universal.



# **A TEST BATTERY TO MEASURE KNOWLEDGE OF POPULATION EDUCATION AMONG THE PARTICIPANTS OF THE NATIONAL ADULT EDUCATION PROGRAMME**

**DR.M.UBAIDULLAH +**

## **Introduction**

A good number of national institutes and individuals in different parts of the world have carried out intensive studies <sup>1-28</sup> to find out the level of awareness of population education among different target groups ranging from school teachers to students. But no test has been constructed to assess the knowledge of population education by using psychometric procedures. Further, all the reported studies have been confined to formal education and nothing tangible has been done in relation to non-formal education. For any tool to be used effectively, a sample of 370 subjects is required. For these reasons, it was considered worthwhile to construct a test following psychometric procedures to find out the level of knowledge among the participants of the National Adult Education Programme (NAEP).

Since population education comprises of several areas, it became necessary to identify areas, and items under each area, that could be included in the test battery. On examination of the hard-core content of population education, the following areas were identified: Population Dynamics, Human Reproduction, Family Life Education, Health, Food and Nutrition, and Family Planning. These areas were also authenticated by ten experts working in the field of population education as possible areas from which items could be developed for the test. As per the experts' advice, it was also decided that a separate test be constructed for each of the above areas.

## **The Item Pool**

For constructing the test-battery, test items were prepared for the newly literate participants of NAEP centres by thoroughly reviewing related literature, including the test items used in various testing situations in India and elsewhere, and by consulting experts. Thus, a draft pool of items for each of these tests was developed in such a way that they not only exceeded the number required for the final test but were clear, concise and free from ambiguity. The 161 draft items were then given to project officers, supervisors and key administrators of the NAEP as also to a forum of NAEP participants in Andhra Pradesh with a request to point out any ambiguity, repetitions and inaccuracies. Based on their suggestions these test items were edited and reviewed. At this stage, the 161 items were distributed under the different tests to be constructed as given below:

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- (1) *Population Dynamics* : 52 items,
- (2) *Human Reproduction* : 22 items,
- (3) *Family Life Education* : 5 items,
- (4) *Health* : 45 items,
- (5) *Food and Nutrition* : 26 items,
- (6) *Family Planning* : 11 items.

#### **A Try-out of the Items**

The items thus developed were randomised under the areas given above and administered to a sample of 370 participants attending the NAEP centres in the state, with standard directions for responses. The participants for this pilot study were selected using a three-stage proportionate random sampling procedure. The items were read out slowly and steadily to each respondent on whom the interview schedule was administered, after reading out the directions to them. Each item together with the alternative responses to it were read out and the respondents were requested to mention the answer which they considered as correct. The responses thus given by the respondents were entered in their protocols.

#### **Scoring**

The answer-key of the knowledge test battery is given in Appendix B. The unit weightage method as justified by Lindquist <sup>29</sup>, Ross and Stanley <sup>30</sup> and Guilford <sup>31</sup> was adopted for scoring the items. Thus, each test was scored separately, giving a credit of one for a correct answer and zero for a wrong answer.

The protocols scored for a particular test were arranged in the descending order of the total score of that test. For example, in the case of the test on Knowledge of Population Dynamics, the protocols were arranged in the descending order of the scores obtained in respect of each protocol. Then, the top 27 per cent (high group i.e., 100 cases) and the bottom 27 per cent (low group i.e., 100 cases) of the protocols were used to find out the item difficulty and item discrimination powers of each item. For each item of the knowledge test, the percentage of persons passing in the high group and the low group, the difficulty index (the average of the two) and the discrimination index (biserial correlation) were calculated as per the procedure explained by Garrett<sup>32</sup>. An item that had a difficulty index between 40-60 per cent and a discriminating index of 0.2 or more was selected for inclusion in the final test. This procedure was repeated each time for selecting items for the different tests comprising the test battery. Thus, each time an item analysis had to be done for a test, the protocols scored were arranged in the descending order of the total scores pertaining to that test for which item analysis was done. This decision was taken because in any knowledge test an item with a 50 per cent difficulty level has been known to discriminate or bring out more individual differences. It is also known that an item with a validity index of 0.2 would go along with the total test and would measure the same thing as measured by the total test.

The final form of the test battery is given in Appendix A.

### Reliability of the Knowledge Tests

The co-efficients of reliability and validity for the knowledge tests were established on a sample of 100 protocols drawn randomly and using random numbers from the 625 protocols obtained from the final study. So, the sample of reliability and validity was justified. For each test of the test battery, split-half reliability was established. The calculation of split-half reliability was very much justified in the case of all the tests except the test on Family Life Education because this test had only four items as against the remaining tests which had many items. Hence, split-half reliability was not established for the test on Family Life Education. The half-test correlations and whole-test correlations following the application of the Spearman Brown Prophecy Formula are given in Table 1.

TABLE 1

Split half and whole-test co-efficients of reliability of the knowledge tests on Population Education

Knowledge Test on:	Split-half reliability co-efficient	Whole-test reliability co-efficient
Population Dynamics	0.639	0.780
Human Reproduction	0.600	0.750
Family Life Education	N.D.	N.D.
Health	0.679	0.809
Food and Nutrition	0.643	0.783
Family Planning	0.777	0.875

N.D.: Not done as the test comprised of only four items.

### Co-efficients of Validity of the Knowledge Test

The knowledge tests possessed content validity, item validity and intrinsic validity which were established as given below.

#### *Content Validity*

Content validity indicates how adequately the content of a test sampling forms the domain about which inferences are to be made. It is particularly important for achievement tests. To restore this type of validity to the test an attempt was made to see that all the areas of population education were included in the test constructed. Under each area, an adequate number of sample items were included. The preparation of test items was preceded by a thorough and systematic examination of all the areas of population education in books and journals. Experts were also consulted. The test items were reviewed in the light of the suggestions made by the experts for adequacy of content and accuracy. In view of this, it may be said that the tests possessed content validity.

#### *Item Validity*

The selection of the items of the knowledge tests was based on item analysis. Each item selected and included in the final test had a satisfactory level of item

difficulty and item discrimination. Hence, the items included in the tests possessed item validity.

TABLE 2

Reliability co-efficients and Intrinsic validity co-efficients of the knowledge tests on Population Education

Knowledge test on	Reliability co-efficient	Intrinsic validity
Population Dynamics	0.64	0.80
Human Reproduction	0.60	0.77
Family Life Education	N.D	N.D.
Health	0.68	0.82
Food and Nutrition	0.64	0.80
Family Planning	0.78	0.88

These co-efficients of intrinsic validity are rather high and indicate that the knowledge tests are valid.

### *Intrinsic Validity*

Intrinsic validity is given by the square root of the proportion of true values (i.e., square root of its reliability). The intrinsic value co-efficients of the tests are given in Table 2. These co-efficients are rather high and indicate that the knowledge tests are valid.

The test-battery designed above thus possesses content validity, item validity and intrinsic validity and appears to be an effective tool for assessing the knowledge of population education of NAEP participants.

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## APPENDIX A

### KNOWLEDGE OF POPULATION EDUCATION

#### 1) Knowledge on Population Dynamics:

11. What was the population of India according to the 1981 census?  
(a) 68.4 crores (b) 71 crores (c) 65 crores (d) 75.2 crores ( )
12. What was the population of Andhra Pradesh according to the 1981 census?  
(a) 5.84 crores (b) 5.34 crores (c) 5.24 crores (d) 5.43 crores ( )
13. In the following age groups, which age group constituted the highest percentage of population in India according to the 1981 census?  
(a) 0-14 (b) 15-30 (c) 31-50 (d) 51 + ( )

4. Which is the most highly populated country in the world?  
(a) India (b) America (c) Russia (d) China ( )
- What is the danger of having more-number of people in the younger age groups?  
(a) More number of people will suffer from disease  
(b) The rate of growth of population will be higher  
(c) More number of people will die in future  
(d) Percentage of illiteracy will be more ( )
6. In the following identify the determinants of population growth:  
(a) Fertility, mortality and migration  
(b) Age, sex and socio-economic status  
(c) Health facilities, transportation and standard of living  
(d) Socio-economic status, climate and occupation ( )
7. Where should births and deaths be registered?  
(a) Police Station (b) Sarpanch (c) Village Munsiff/Karnam (d) Post-master ( )
8. What is the right description of the relationship between economic development and population increase?  
(a) No relationship (b) Wages increase with population growth (c) Economic development impedes population growth (d) Population growth by all means impedes economic development ( )
9. What is the impact of population growth on education?  
(a) No impact (b) Population growth creates a need for more and more resources for education (c) Quality of education goes up (d) Rapid growth of literacy rate ( )
10. What is the right description of the relationship between population growth and environment?  
(a) No relationship (b) Environment could be kept clean (c) Pollution problems could be controlled (d) Invites ecological change ( )
11. What is the main reason in India for many people not getting sufficient food?  
(a) The number of shops is less (b) The population is increasing (c) Everybody eats more food (d) Export of food items is more ( )
12. What is the main reason for unemployment in India?  
(a) Population is increasing (b) Literates are more (c) Immigration is high (d) People like to work ( )
13. What is the main reason for rural to urban migration in India?  
(a) Improper health facilities (b) No recreational facilities (c) People do not like to stay in villages (d) Unemployment and under-employment ( )
14. How can we eradicate poverty in India?  
(a) By educating people to have small families (b) By asking people to work (c) By giving more money to the poor (d) By opening more banks ( )
15. What is the main reason for the housing problem in India?  
(a) Lack of building material (b) Lack of labour (c) Over-population (d) Lack of housing sites ( )

16. The proportion of men is more than women in India.  
(a) Yes (b) No ( )
17. There is no depletion of natural resources in India due to population growth.  
(a) Yes (b) No ( )
18. The absolute number of illiterates is increasing in India.  
(a) Yes (b) No ( )
19. Advanced medical technology has not resulted in the reduction of mortality considerably in India.  
(a) Yes (b) No ( )
20. The rapid growth of India's population is due to the occurrence of more births and less deaths.  
(a) Yes (b) No ( )
21. Fragmentation of land in our villages is due to explosion of families.  
(a) Yes (b) No ( )
22. Expectation of life at birth in India is increasing.  
× (a) Yes (b) No ( )

**Knowledge on Human Reproduction:**

1. What is the approximate age at which sexual maturity begins in males?  
(a) at 13 years (b) at 16 years (c) at 20 years (d) at 24 years ( )
2. What is the approximate age at menarche for females in India?  
(a) at 14 years (b) at 18 years (c) at 22 years (d) at 26 years ( )
3. What do you mean by sexual maturity in males?  
(a) Physical growth in height and weight (b) Showing interest in the other sex (c) Appearance of moustache (d) Production of sperm ( )
4. What do you mean by sexual maturity in females?  
(a) Appearance of breasts (b) Starting of menstrual cycle (c) Closely moving with boys (d) Physical growth of the body ( )
5. What is the major hazard of pre-marital sex?  
(a) Increase in crime (b) Social deviation (c) Increase in incidence of deaths (d) Increase in illegal abortions and conceptions ( )
6. When does menopause occur among women?  
(a) At the age of 35 years (b) At the age of 40 years (c) At the age of 44 years (d) At the age of 50 years ( )
7. Can you identify a pair of sexually transmitted diseases from the following:  
(a) Heart attack and blood pressure (b) Syphilis and Gonorrhoea (c) T.B. and leprosy (d) Malaria and Typhoid ( )
8. How do sexually transmitted diseases occur?  
(a) When a person commits a sin (b) Due to the curse of God (c) When a person sits by the side of a diseased person (d) When a person has sexual contact with a diseased person ( )

9. Where are the reproductive cells produced in the man's body?  
(a) Kidneys (b) Testicles (c) Abdomen (d) Pelvis ( )
10. Where are the reproductive cells in the woman's body produced?  
(a) Stomach (b) Kidney (c) Heart (d) Ovary ( )
11. Where is the child formed in the woman's body?  
(a) Intestines (b) Uterus (womb) (c) Stomach (d) Lungs ( )
12. How is an infant formed in a woman's womb?  
(a) When a man's body touches a woman's body (b) When the blood cells of a man combine with the blood cells of the woman (c) When they worship God (d) When a sperm unites with the ovum ( )
13. Which one of these common symptoms indicate pregnancy?  
(a) Anaemia (b) Frequent menstruation (c) Stopping of menstrual cycle (d) Decrease in body temperature ( )
14. Sex need not be curtailed during pregnancy  
(a) Yes (b) No ( )
15. During which days of the menstrual period does a woman of reproductive age have a chance to become pregnant?  
(a) During menstruation (b) 5 days before menstruation (c) 10 days after menstruation (d) 7th to 21st day in a 28-day menstrual cycle ( )
16. It is not necessary to wash after coitus.  
(a) Yes (b) No ( )
17. Wet dreams are common.  
(a) Yes (b) No ( )
18. Why does bleeding occur during menstruation?  
(a) Waste material is discharged from the woman (b) Due to anaemia (c) Due to the discharge of excess blood (d) Due to fall of hormonal levels in the blood ( )

### 3. Knowledge on Family Life Education

1. What is the minimum age of marriage fixed by the Government of India for males?  
(a) 18 years (b) 20 years (c) 22 years (d) 21 years ( )
2. What is the minimum age of marriage fixed by the Government of India for females?  
(a) 18 years (b) 20 years (c) 19 years (d) 21 years ( )
3. Mention an important consequence of early marriage.  
(a) Frequent abortions (b) Leads to physical and mental weakness (c) Losing the chastity of woman in society (d) Onset of cancer of the cervix ( )
4. Is dowry-taking legally permitted in India?  
(a) Yes (b) No ( )

### 4. Knowledge on Health:

1. What are the health services available in a primary health centre?  
(a) Family planning (b) M.C.H (c) Preventive, promotive and curative services (d) Medicare ( )



2. What is a sub-centre?  
(a) It is health centre for villagers  
(b) It is a peripheral outpost of the health care system  
(c) It is a centre to provide family planning services  
(d) It is a centre to provide medicare for poor people ( )
3. Who is a community health worker?  
(a) Government identified health worker to carry out health programmes.  
(b) Providing health amenities for money to the villagers  
(c) Homeopathy doctor  
(d) Social reformer for the poor ( )
4. What is health education?  
(a) It is to bring changes in the health practices of the people and in their knowledge and attitudes related to such changes.  
(b) It is to teach good health practices to the rural people  
(c) It is to bring changes in the health attitudes of the rural people.  
(d) It is to provide health knowledge to the people ( )
5. Identify a set of water-borne diseases from the following:  
(a) Cholera, typhoid and dysentery (b) Malaria, T.B. and cancer (c) Plague, filariasis and small pox (d) Heart attack, blood pressure and fever ( )
6. Identify a set of insects carrying diseases from the following. (a) Butterflies, ants and cockroaches  
(b) Mosquitoes, flies and fleas (c) Prans, scorpions and honeybees (d) Snakes, honeybees and cockroaches ( )
7. Identify insect-borne diseases from the following:  
(a) Common cold, chicken pox and mumps (b) T.B., cancer and small pox (c) Malaria, filariasis and plague (d) Chicken pox, mumps and polio ( )
8. Identify the set of air-borne diseases from the following :  
(a) Cancer, dysentery and malaria (b) Small-pox, chicken pox and common cold (c) plague, filariasis and mumps (d) Polio, filariasis and plague ( )
9. Identify the diseases caused by open-air defecation:  
(a) Typhoid, cholera and dysentery (b) Malaria, T.B. and cancer (c) small pox, chicken pox and malaria (d) Polio, mumps and filariasis ( )
10. Identify a set of infectious diseases from the following:  
(a) Cholera, chicken pox and hookworm (b) Cancer, headache, and blood pressure (c) Heart attack, diabetes and mental illness (d) Polio, heart attack and cancer ( )
11. Why should infectious diseases be controlled?  
(a) Because they are not curable (b) Because they spread from one person to the other very quickly (c) Because it is difficult to control them (d) Because it is a costly affair to control them ( )
12. Identify the diseases caused by improper cleaning of teeth?  
(a) Pyorrhoea (b) Beri beri (c) Rickets (d) Night blindness ( )
13. Identify the immunisations to be given to a child:  
(a) Fever, diarrhoea and cancer (b) BCG, smallpox, DPT, T.B. and measles (c) Cancer, fever and heart attack (d) Headache, fever and diarrhoea ( )

14. What are the common diseases among children below 6 years?  
(a) Fever, diarrhoea, D.P.T and whooping cough (b) Headache (cancer and T.B) (c) Filariasis, T.B. and heart attack (d) Typhoid, malaria and T.B. ( )
15. What are the facilities available from the Government under natal care to women?  
(a) Nothing (b) Domiciliary care (c) Domiciliary and institutional care (d) Institutional care ( )
16. What are the services available from the Government under post-natal care?  
(a) Nothing (b) Health check-up, health education, medicines, family planning advice and care of the new-born (c) M.C.H. and family planning services (d) Health check-up and family planning ( )
17. What is the effect of alcoholism?  
(a) Increased memory power (b) Damage to the liver (c) Damages to the kidney (d) Causes indigestion ( )
18. What is the effect of smoking?  
(a) Makes people more lazy (b) Causes indigestion (c) Damages the lungs (d) Makes people more active ( )
19. What is the ideal gap to be given between each pregnancy?  
(a) One year (b) Two years (c) Three years (d) Six months ( )
20. What is the effect of repeated pregnancies on children?  
(a) Illness (b) T.B. (c) Mental deficiency (d) Malnutrition ( )
21. What is the effect of repeated pregnancies on a woman?  
(a) Cancer (b) Fever (c) T.B. (d) Anaemia ( )
22. Drinking of protected water does not cause diseases.  
(a) Yes (b) No ( )
23. It is not necessary to clean the hair everyday.  
(a) Yes (b) No ( )
24. It is not necessary to take a bath everyday.  
(a) Yes (b) No ( )
25. Immunisation of children protects them from various j infectious diseases.  
(a) Yes (b) No ( )

##### 5. Knowledge on Food and Nutrition

1. Food helps mainly for:  
(a) Energy, growth and protection (b) Good memory and energy (c) Growth and protection (d) To survive ( )
2. What foods that should be taken everyday in order to be healthy?  
(a) Cereals, pulses and vegetables (b) Only fleshy foods (c) Fats and oils (d) Only rice ( )
3. What are the energy-giving foods?  
(a) Cereals, sugar, fats and oils (b) Vegetables and fruits (c) Fleshy foods (d) Leafy vegetables ( )

# **IMPACT OF AGE AT MARRIAGE ON FERTILITY AND COMPLETED FAMILY SIZE IN EASTERN RAJASTHAN**

**MR. R.K. SINHA +**

## **Introduction**

In most societies family building occurs within marriage and fertility behaviour depends on the length of fertile union during the woman's reproductive period. The main factors affecting fertility behaviour are age at marriage and the proportions of women who marry. It is commonly believed that an increase in age at marriage beyond a certain minimum results in a reduction of the fertility level and also advances the mean age of child-bearing. Both these factors result in a slowing down of population growth. In the context of developing countries which are in the grip of high rates of population growth, the use of age at marriage as an instrument to curtail fertility levels and thereby to slow down the rate of population growth is thus of special significance.

Several studies have shown that differences in age at marriage can account for a substantial variation in the fertility of non-contracepting populations. In addition to having a direct influence on fertility through length of exposure, age at marriage is also related to fertility indirectly through socio-cultural and economic factors. Female age at marriage and its effect on societal fertility is a much investigated topic in the field of demography.

In India, a number of studies have been conducted to estimate the effects of higher female age at marriage on fertility. The Mysore Study<sup>1</sup> observed that females marrying between 14 and 17 years of age gave birth to 5.9 children while those marrying between 18 and 21 years bore only 4.7 children. Agarwala<sup>2</sup> pointed out that if female age at marriage in India were raised from an average of 15.6 years to 19.3 years there would be a decline of 27 per cent in the birth rate. Results from studies conducted in different parts of the world also indicate a similar relationship. Coale and Tye<sup>3</sup> have demonstrated that the postponement of marriage contributes significantly to a reduction in the birth rate and population growth. Working with Bolivian and Turkish data, Leasure<sup>4</sup> found a substantial decline in fertility when the average female age at marriage was raised to 27 or 28 years. According to Kim,<sup>5</sup> the birth rate in Korea declined by 19.5 per cent because of an increase in female marriage age from 16.5 years in 1935 to 21.3 years in 1960. Kim and his co-workers also observed elsewhere<sup>6</sup> that age at marriage was the most important factor in explaining fertility decline among the currently married Korean women, aged 40-49 years during the past two decades. Contrary to the findings of the above studies, Das<sup>7</sup>

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did not find any significant impact upon fertility with increase in age at marriage. His findings suggest the existence of a critical line below which the postponement of marriage does not have a bearing on completed family size. Another study<sup>9</sup> gave no evidence of any consistent relationship between age at marriage and fertility.

The fertility of a population bears an important link with female age at marriage. It has been established through several studies that reduction in fertility (in terms of birth rate or total number of children ever born) due to a rise in female marriage age is mainly a result of a shortening of the reproductive period. It has been argued that there could be a shift in the fertility pattern in favour of fewer children associated perhaps with factors like education and modernisation, which in turn, contribute to the postponement of marriages, ultimately leading to a shortening of the reproductive period and thereby cutting down the level of fertility and completed family size. In the light of several findings in India and other parts of the world, this study provides an interesting opportunity to examine the relationship between age at marriage and fertility in eastern Rajasthan.

#### **Data, Sample Design and Study Area**

A large-scale sample survey was conducted in Rajasthan during 1980-81 by the International Institute for Population Sciences (IIPS), Bombay, and the Office of the Registrar General of India (RGI), New Delhi<sup>9</sup>. Data collection was carried out from January 1981 to July 1981 in three project districts and three non-project districts of Rajasthan, covering a total sample of 6,000 households. The field work was carried out in collaboration with the National Institute of Health and Family Welfare (NIHFW), New Delhi, and the Directorate of Health Services (DHS), Rajasthan. Data collection was done by canvassing questionnaires through field investigators who were college graduates and had been exposed to intensive training. The field work was organised under the strict supervision and guidance of senior supervisors and representatives from the collaborating agencies.

The data for three eastern districts of Rajasthan namely: Bharatpur, Sawai-Madhopur and Kota, consisting of a sample of 2,569 currently married women provided the basis of analysis for this study. These three districts taken together form a contiguous sub-sample of the eastern zone which facilitates a study of fertility differentials in relation to age at marriage.

The sampling design of the survey was such that it provided independent and statistically reliable estimates of demographic parameters for rural and urban areas separately. A multi-stage stratified sampling design was adopted in which a specified number of villages or urban blocks were selected in the first stage, followed by a selection of 50 households from each selected village of the rural area and 50 households from each selected urban area, through the systematic sampling method. The selection of villages and towns was carried out with probability proportional to size (PPS), in order to maximize the spread of the villages or towns, and thereby to improve the efficiency of our estimates.

In each district, a total sample of 1,000 households consisting of 800 rural and 200 urban households was selected. From each selected household, currently married women aged 12-49 years were identified and interviewed by female investigators.

Some selected characteristics of the study population as presented in Table 1, indicate that the socio-economic condition prevailing in the study area was considerably low<sup>n</sup>. A majority of the households had poor living conditions; only about one-third of the population lived in pucca or semi-pucca houses. The social status of the women was rather low: only 19 per cent were literate and 2.2 per cent had studied upto the matriculation level or above. The literacy level of the rural respondents was even more deplorable. About 13 per cent of the women who were currently married were 10 to 14 years of age, and nearly two-thirds were in the 15 to 19 age group, thereby reflecting a pattern of early marriages.

TABLE 1

Selected households and population characteristics of the study area, Rajasthan, 1981

Characteristics	Bharatpur	Sawai	Kota	Rural	Urban	Total area
Average size of household	6.3	5.8	5.7	5.9	6.2	6.0
% households living in Pucca/Semi Pucca house	45.9	21.3	33.9	24.6	73.8	34.1
% literate						
Males (5+)	51.7	43.0	62.3	46.7	74.0	52.4
Females (5+)	17.4	13.6	25.6	11.5	45.8	18.8
% currently married women in age groups:						
10-14	10.1	21.1	11.0	14.5	9.8	13.5
15-19	54.2	71.7	56.3	70.3	34.0	60.6
20-24	94.7	99.1	91.5	97.7	86.0	94.9
% currently married women to total women in age groups:						
15-44	85.9	90.4	89.1	91.7	77.2	88.4
15-49	86.3	89.5	89.5	91.4	78.3	88.4

Source: "Baseline Survey on Fertility, Mortality, Family Welfare and Utilisation of Health and Family Welfare Services in Rajasthan", a report by NIHFW, New Delhi; IIPS, Bombay; DHS Rajasthan R.G.I., New Delhi (October 1982).

### Findings and Discussions

The age at marriage here, refers throughout to the age at effective mar-

riage for the study population. The practice of 'gauna' before the consummation of marriage is quite prevalent in the northern belt of India and is sometimes referred to as the 'second marriage' or 'return' marriage". The average number of children ever born and surviving was computed from ungrouped data. The average number of children ever born for women of all ages was 4.3 and the corresponding average of surviving children was 3.2.

Table 2 gives the average number of children ever born to women by present age and their age at marriage. The inverse relationship between age at mar-

TABLE 2

Average number of children ever born by age group and age at effective marriage

Age at effective marriage (years)	Average number of children ever born						No. of women
	Age group of women (years)						
	20-24	25-29	30-34	35-39	40-49	All ages	
< 11	2.00	3.59	5.00	6.47	7.26	4.60	515
11-12	1.94	3.70	5.53	6.26	7.36	4.10	374
13-14	1.96	3.74	5.31	5.91	7.48	4.23	417
15-16	1.52	2.92	4.59	6.40	7.26	4.62	618
17-18	1.16	2.80	4.50	5.88	7.75	3.62	230
19-20	0.86	2.48	3.43	3.83	6.39	3.55	111
21 +	0.75	1.18	2.46	2.83		3.12	50
All ages	1.68	3.27	4.88	6.08	7.26	4.32	
No. of women	487	468	384	336	640		2315*

\* Excludes currently married women belonging to age groups below age 20.

riage and fertility evident from these findings occurred irrespective of whether an age-cohort estimate or an average of all the age cohorts was examined. The fluctuations observed among certain age groups above 25 years could be the result of a possible bias in the reporting of age at marriage and current age. The estimates established a negative trend between age at marriage and fertility. For example, the average number of children ever born to women aged 30-34 years in 1981 was 4.5 for those married between the ages of 17-19, and 3.4 for those married between the ages of 19-21. Similarly, for women aged 35-39 years, the corresponding values for children ever born were 5.9 and 3.8 for the two groups respectively. This suggests that age 19 is the critical age which indicates the direction of the inter-relationship between fertility and age at marriage. Completed family size as obtained for women aged 40-49 years was 7.3 and the estimate for the average number of children ever born to women aged 15-49 years was 4.3.

Table 3 presents the average number of children surviving to women by

TABLE 3

## Average number of surviving children by age group and age at effective marriage

Age at effective marriage (years)	Average number of surviving children						No. of women
	Age group of women (years)						
	20-24	25-29	30-34	35-39	40-49	All ages	
< 11	1.60	2.78	3.86	4.28	4.92	3.31	515
11-12	1.58	3.06	4.14	4.61	5.05	3.06	374
13-14	1.64	3.04	4.07	4.27	4.92	3.13	417
15-16	1.31	2.59	3.54	4.53	4.76	3.34	618
17-18	1.04	2.19	3.63	4.14	5.41	2.75	230
19-20	0.82	2.08	2.85	2.72	4.71	2.70	111
21 +	0.50	1.10	2.00	2.33		2.56	50
All ages	1.40	2.69	3.76	4.26	4.91	3.15	
No. of women	487	468	384	336	640	—	2315*

\* Excludes currently married women belonging to age groups below age 20.

present age and their age at marriage. The categorisation for age at marriage and age cohorts was identical to Table 2. Table 3 indicates that woman who had completed their family size (40-49 age group) in 1981 had an average of 4.9 living children. Those who had married between 17-19 years of age had an average of 5.4 living children as compared to 4.7 living children among those who had married after age 19. In other words, an average of 1.3 additional live births or an average of 0.7 additional living children was reported for a woman aged 40-49 in 1981, who had married between 17 to 19 years of age as compared to a woman who had married after that age.

TABLE 4

## Average child loss among respondents by age group and age at effective marriage for study area

Age at effective marriage (years)	Average child loss					
	Age group of women (in years)					
	20-24	25-29	30-34	35-39	40-49	All ages
<11	0.40	0.81	1.14	2.19	2.34	1.29
11-12	0.36	0.64	1.39	1.65	2.31	1.04
13-14	0.32	0.70	1.24	1.66	2.56	1.10
15-16	0.21	0.33	1.05	1.87	2.50	1.28
17-18	0.12	0.61	0.87	1.74	2.34	0.87
19-20	0.04	0.40	0.58	1.11	1.68	0.85
21 +	0.25	0.08	0.46	0.50		0.56
All Ages	0.28	0.58	1.12	1.82	2.35	1.17

TABLE 5

Average number of children ever born to respondents by age group and age at effective marriage for rural and urban areas

<b>A. Rural study area:</b>						
Age at effective marriage (years)	Average number of children ever born					
	Age group of women (in years)					All ages
	20-24	25-29	30-34	35-39	40-49	
< 11	1.97	3.58	5.05	6.52	7.15	4.57
11-12	1.96	3.84	5.59	6.84	7.45	4.23
13-14	1.81	3.70	5.24	5.94	7.51	4.18
15-16	1.47	2.82	4.74	6.48	7.26	4.71
17-18	1.10	2.79	4.65	6.22	7.85	4.09
19-20	1.10	2.63	3.62	3.83	7.35	3.67
21 +	0.75	1.25	2.11	2.66		
All	1.69	3.30	4.97	6.27	7.39	4.39
No. of women	373	372	314	269	498	1826
<b>B. Urban Study area</b>						
> 0	2.22	3.63	4.58	6.00	7.73	5.22
11-12	1.87	3.07	5.25	4.37	7.00	3.54
13-14	2.47	3.83	5.61	5.73	7.42	4.52
15-16	1.71	3.27	3.76	5.94	7.50	4.54
17-18	1.23	2.82	4.20	5.22	6.80	3.10
19-20	0.67	2.00	3.16	3.83		
21 +	—	1.00	3.00	3.00	5.20	3.08
All	1.63	3.19	4.48	5.29	7.11	4.08
No. of women	114	96	70	67	142	489

Table 4 indicates that the study area suffered an average child loss of 1.2 children. It is interesting to note that the incidence of child loss was lower for women who had married later than for those who had an early marriage. The average child loss for women aged 40-49 years was less (1.7) for those who had married at age 19 and above as compared to those who had married at age 16 and below (2.4). An identical trend was noticed for other age cohorts. This finding has important research and policy implications, the obvious latter implication being that the marriage age of females should be raised to 20 or above.

Tables 5 and 6 give the rural and urban estimates of the average number of children ever born and children surviving respectively to currently married women (15-49) by their age at marriage and current age in 1981. The findings were in conformity with the results of the entire study area. The inverse relationship between fertility and age at marriage as established earlier for the total



TABLE 6

**Average number of surviving children to respondents by age group and age at effective marriage for rural and urban areas**

<b>A. Rural study area</b>						
Age at effective marriage (years)	Average number of surviving children					
	Age group of women (in years)					
	20-24	25-29	30-34	35-39	40-49	All ages
< 11	1.59	2.80	3.88	4.26	4.72	3.22
11-12	1.56	3.10	4.13	4.84	5.02	3.08
13-14	1.50	2.95	3.87	4.07	4.72	2.97
15-16	1.23	2.46	3.56	4.41	4.56	3.26
17-18	0.95	2.10	3.75	4.00	5.62	2.89
19-20	1.00	2.10	2.87	2.41	5.19	2.70
21+	0.50	1.00	1.77	2.00		
All	1.39	2.65	3.76	4.21	4.79	3.11
No. of women	373	372	314	269	498	1826
<b>B. Urban study area</b>						
Less than 10	1.68	2.63	3.75	4.50	5.92	3.99
11-12	1.67	2.92	4.16	3.87	5.27	2.94
13-14	2.16	3.37	4.92	4.73	5.50	3.63
15-16	1.58	3.04	3.38	5.16	5.41	3.63
17-18	1.14	2.41	3.40	4.44	5.00	2.53
19-20	0.67	2.00	2.83	3.33		
21+	—	1.00	2.50	2.66	4.10	2.58
All	1.45	2.82	3.77	4.46	5.28	3.29
No. of women	114	96	70	67	142	489

area was again supported by the estimates obtained for both the rural and urban samples of the population. It can be suggested that age 19 may be a cut-off point in predicting fertility decline due to delayed marriage. The estimates for completed family size (women aged 40-49) was 7.4 for the rural study population and 7.1 for the urban study population. As expected, the estimates for children ever born in the urban sector were relatively lower than in the rural sector whereas the estimates for children surviving were higher in urban than in rural areas, for all the age cohorts. Rural and urban woman aged 40-49 in 1981, who had been married between the ages of 17 and 19, had an average of 5.6 and 5.0 living children respectively as compared to 5.2 and 4.1 living children, in rural and urban areas, respectively, for those who had married after age 19. In other words, an average of 0.5 additional live births or an average of 0.4 additional living children were reported for rural women aged 40-49, mar-

ried between ages 17-19, as compared to those who had married later. Similarly, an average of 1.6 additional live births or an average of 0.9 additional living children were reported for urban women aged 40-49 who had married before the age of 19, as compared to those who had married after that age. This indicates that the impact of age at marriage on fertility is greater in urban than in rural areas. Perhaps this finding supports the hypothesis that education and modernisation lead to lower fertility.

### Conclusion

Although historically a well-established inverse relationship between woman's age at marriage and her fertility has been found throughout the world, more recently it has been felt that this association has become substantially weaker in the developed countries. Glass and Grebenick<sup>11</sup> have emphasised the decreasing importance of age at marriage in predicting fertility. They have argued that age at marriage and fertility are not strongly linked for the more recently married group due to their adoption of birth control measures. Nevertheless, differentials in fertility by age at marriage have remained relatively large in societies in which universal and early marriages, and little use of contraception are prevalent. The population of eastern Rajasthan presents these characteristics<sup>10</sup>, and in this context, it was quite intriguing to examine fertility differentials in relation to age at marriage.

The findings support the negative association between age at marriage and fertility. It is suggested that age nineteen may be a cut-off point in predicting fertility decline due to postponement of the girl's marriage in eastern Rajasthan. It is notable that an average of 1.3 additional live births or an average of 0.7 additional living children were reported for women who had completed their family size (aged 40-49) and who were married before age 19 as compared to those who had married later. These findings were supported by estimates from both rural and urban sectors. Further, the impact of age at marriage on fertility was observed to be greater in the urban than in the rural sector.

However, in order to influence the level of fertility substantially, female age at marriage will have to be raised beyond nineteen in the study area. It is important in this context that various media and communication channels should be geared up to make the population aware of the benefits of late marriages and the adoption of the small family norm.

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# **INTERMEDIATE VARIABLES AFFECTING FERTILITY IN FOUR MUSLIM COUNTRIES**

**PROF. SULTAN AHMED +**

## **Introduction**

Variations in fertility levels among populations showing 'natural fertility' are obviously due to variations in one or more of the biological and behavioural variables termed as 'intermediate variables' by Davis and Blake<sup>1</sup>. Since their publication in 1956, this set of intermediate variables has served as a very useful conceptual scheme in fertility research. There are, however, operational problems: the conceptual scheme has limited practicability in its application because it is difficult to obtain accurate information on some of the intermediate variables, such as foetal mortality due to involuntary causes, involuntary abstinence, coital frequency, and fecundity or infecundity as affected by involuntary causes. Hence, no reliable data are yet available on all the eleven intermediate variables. Moreover, it is superficial to explain fertility levels merely in terms of the net balance of the values of the intermediate variables because of the complexity of the interrelationships among the intermediate variables themselves and between them and actual fertility.

As mentioned, no empirical study has ever used all the eleven intermediate variables to determine their effect on fertility in any society. This is undoubtedly because of the problem of collecting reliable data on all the variables in a society on the one hand, and variations in the sensitivity of fertility levels to individual intermediate variables on the other. Davis and Blake<sup>1</sup> have pointed out that voluntary abstinence and foetal mortality due to involuntary causes usually have low values in pre-industrial societies, and even the effects of involuntary abstinence, frequency of coitus and involuntary sterility are indeterminate in such societies. Thus, age of entry into unions, permanent celibacy, contraception, sterilisation, time spent within marriage, and foetal mortality due to voluntary causes seem to be the most important variables in explaining fertility differences among pre-industrial societies.

Tien<sup>2</sup> argues that late marriages, contraception and abortion are all key intermediate variables that matter separately, collectively, or in succession in concrete instances. Bongaarts<sup>3</sup> reclassified the eleven intermediate variables proposed by Davis and Blake<sup>1</sup> and suggested that contraception, induced abortion, lactational infecundability, frequency of intercourse and duration of the fertile period are the variables that give rise to variations in natural fertility among societies. Bongaarts<sup>4</sup> subsequently gave an approximate rating to the seven intermediate variables he thought to be important in explaining fertility differences among populations. He based his rating on the sensitivity of fertility to varia-

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tions in each of the intermediate variables and on their variability over time. On the basis of the ratings, he concluded that "four intermediate variables—proportion married, postpartum infecundability, contraception, and induced abortion—are the most important ones in the analysis of fertility levels and trends". Utilising data from 41 populations that included contemporary developing and developed countries, as well as historical data, he demonstrated that the above-mentioned four factors explained 96 per cent of the variance in the total fertility rate.

An attempt is made in this paper to study the differentials in selected intermediate variables and their effects to explain fertility differentials in four selected Muslim populations.

### **Data and Methodology**

The populations used in this study belong to Bangladesh, Java, Jordan and Pakistan. We have selected respondents who were reported to be Muslim in Bangladesh and Jordan (information on religion was collected in these two populations only), all respondents from Pakistan (97 per cent of the population is Muslim) and respondents from the island of Java only in Indonesia (the survey was conducted in the islands of Java and Bali, and about 95 per cent of the population in Bali is non-Muslim). The total number of ever-married women aged 15-49 selected in our analysis was 5,196 in Bangladesh; 8,224 in Java; 3,404 in Jordan and 4,920 in Pakistan. Data relating to the selected intermediate variables namely length of breast-feeding, use of contraception and number of induced abortions were collected as part of the World Fertility Survey projects in these populations in the mid-1970s.

Data on breast-feeding were confined to the last two children, or the last child if the respondent had only one; only in Pakistan the length of breast-feeding was obtained for every live birth. We have used the data on breast-feeding relating to the penultimate child only because the quality of data was found to be better than that for the open birth interval<sup>5</sup>.

First, Bongaarts' model was used to estimate the contributions of the four intermediate variables in explaining fertility differentials. According to Bongaarts<sup>4</sup>:

$$\text{TFR} = \text{Cm} \times \text{Cc} \times \text{Ca} \times \text{Ci} \times \text{TF}$$

where TFR = Total fertility rate,

Cm = Index of marriage,

Cc = Index of contraception,

Ca = Index of induced abortion,

Ci = Index of postpartum infecundability,

TF = Total fecundity rate.

Bongaarts<sup>3</sup> estimated the total fecundity rate as about 15.3 births per woman and showed that developed and developing countries had more or less the same fecundity rate.

Taking a total fecundity rate of 15.3 per woman, TFR was estimated from the values of the other four variables and compared with the observed TFR. If the values of TFR or Cm were not known, the total marital fertility rate (TM) was estimated from:

$$TM = Cc \times Ca \times Ci \times TF$$

From the World Fertility Survey recode data, it is possible to calculate Cm only from the data obtained from the household schedules which were not available to us. Thus, our analysis was restricted to the estimation of TM instead of TFR.

The index of contraception (Cc) can be estimated from:

$$Cc = 1 - 1.08 \times e \times u$$

where 'u' is the prevalence of contraceptive use (including male methods and sterilisation operations) among married women of reproductive age 15-49; 'e' is the average use-effectiveness of contraception, and 1.08 is a sterility correction factor.

The method specific values observed in the Philippines (reported in Bongaarts<sup>4</sup> have been used as a standard in the calculation of the average effectiveness levels in our four populations.

The index of induced abortion (Ca) can be estimated from:

$$Ca = \frac{TFR}{TFR + 0.4 (1+u) \times TA}$$

where TA is the total abortion rate (including only abortions among married women). The total abortion rate is a life-time measure. It describes the number of induced abortions women would have if they lived through their entire reproductive period, and if the current induced abortion rate in each age group is applied for them.

Bongaarts suggested that a crude estimate of the total induced abortion rate can be obtained by multiplying by 30 the number of induced abortions per woman aged 15-44. Hill and Shorter<sup>6</sup> suggested that in the absence of information necessary to estimate TA, one may use the cumulated total number of induced abortions per woman reported by women in the 40-44 age group. This measure, of course, refers not only to the present but to the past, when a different abortion rate may have prevailed and, hence, may be an under-estimate if attitudes towards abortion have changed (relaxed) over time.

Since, we had data on the cumulative number of induced abortions by age group, we have used the total number of induced abortions per woman in the age group 40-44 as a measure of TA. The TFR needed to solve the equation for Ca is that reported in the respective country reports; as was suggested by Bongaarts<sup>3</sup>, any rough estimate of TFR is acceptable.

The index of postpartum infecundability (Ci) can be estimated from:

$$Ci = \frac{20}{18.5 + i}$$

where 'i' is the mean duration of postpartum infecundability. Since a direct estimate of 'i' is not available for our populations, an indirect estimate was obtained using the following equation of Bongaarts<sup>4</sup>:

$$i = 1.753 \exp (0.1396 \times B - 0.001872 B^2)$$

where B is the mean or median duration of breast-feeding in months.

### Results and Discussion

Table 1 presents estimates of the total marital fertility rates and of the intermediate variables. The values of prevalence of contraceptive use and total induced abortion rates were calculated from the respective WFS data. Use effectiveness of contraception was calculated by using method specific values for the Philippines, as mentioned earlier.

TABLE 1

Total marital fertility rate and estimates of intermediate fertility variables

	Total Marital Fertility Rate*	Prevalence of Contra- ceptive Use (u)	Use Effect- iveness of Contra- ception (e)	Total Induced Abortion Rate** (TA)	Mean Duration of Postpartum Infecundability (i)
Bangladesh	7.25	0.081	0.825	0.004	17.00
Java	6.33	0.239	0.837	0.004	11.80
Jordan	10.27	0.212	0.842	0.350	7.20
Pakistan	7.55	0.061	0.816	0.000	11.80

\* Average of last five years preceding the survey.

\*\* Proportion of induced abortion reported per woman in the age group 40-44.

The mean duration of postpartum infecundability was estimated by using the equation suggested by Bongaarts. The median duration of breast-feeding reported for the penultimate child in the individual populations was used for estimating the mean duration of postpartum infecundability: for Bangladesh: 24 months; Java: 18 months; Jordan : 12 months, and Pakistan : 18 months.

Total marital fertility rates were calculated by averaging the births reported in the five years preceding the surveys. The problem in using the reported births in the year before the survey for calculating TM is that of the dating of births in the pregnancy histories. It has been suggested that in many cases the dates of birth recorded in the pregnancy histories are distorted in systematic ways that give rise to biases in the estimates of fertility derived from them<sup>7,8</sup>. To minimise the problem, an average of five years preceding the surveys was used in the estimation of TM.

From the data presented in Table 1, the indices Cc, Ca, and Ci were calculated and total marital fertility rates were then estimated from:

$$TM = Cc \times Ca \times Ci \times 15.3$$

The model estimates of TMs are shown in the last column of Table 2. A comparison of the model estimates with the observed ones reveals that the model

over-estimates TM by 10 per cent in Bangladesh, by about 24 per cent in Java, and 26 per cent in Pakistan; but under-estimates it by 9 per cent in Jordan. The variance in fertility that is not explained by the intermediate variables used in the analysis may be due to the following factors<sup>4</sup>:

1. Errors in the measurement of the intermediate variables,
2. Errors in the specification of the model,
3. Deviation from the total fecundity value of 15.3,
4. Errors in the observed fertility rates.

TABLE 2

Estimates of the indices of the intermediate fertility variables and model estimates of total marital fertility rate

	Index of Contra- ception  (Cc)	Index of Induced Abortion  (Ca)	Index of Postpartum Infecund- ability  (Ci)	Model Estimate of Total Marital Fertility Rate
Bangladesh	0.926	1.0	0.563	7.98
Java	0.780	1.0	0.660	7.88
Jordan	0.804	0.978*	0.778	9.36
Pakistan	0.946	1.0	0.660	9.55

\* TFR of 7.62 for Muslims has been used in calculating Ca for Jordan

The apparent discrepancy between the model estimate and the observed value of TM in Bangladesh is, to some extent, due to errors in the observed TM. After reviewing the existing estimates on the levels of fertility in Bangladesh, the National Research Council Panel on Bangladesh concluded that "because of data weaknesses it is impossible to be sure of the exact level of fertility in Bangladesh, although total fertility has probably averaged in the range of 6.8 to 7.3 over the 15 years or so prior to 1975". Moreover, some errors in the measurement of the intermediate variables and the specification of the model cannot be ruled out.

The reason for the discrepancy in the case of Java is more difficult to explain. The observed TM for Java does not seem to be an under-estimate. Possibly, childlessness and postpartum sexual abstinence are some of the important factors not included in the model, which might have contributed to the observed low level of TM in Java. Some error in the measurement of the intermediate variables is another possibility.

The observed discrepancy in Jordan may be due to combinations of measurement errors in intermediate variables along with some possible deviation from the total fecundity value of 15.3. Over-estimation of TM seems to be very unlikely.



The deviation observed in Pakistan may possibly be due to errors in the specification of the model combined with errors in the measurement of the intermediate variables. Under-estimation of TM does not seem to be likely.

The purpose of the model, of course, is not to provide an estimate of TMs, but rather, to give an approximate breakdown of the contributions made by different variables to levels of fertility.

If we consider the effects of the three intermediate variables, namely contraception, induced abortion and postpartum infecundability, it is clear that postpartum infecundability (lactation) plays the dominant role in Bangladesh followed by contraception, while the effect of induced abortion is nil (Table 2). Similar effects are also observed in Java, Jordan and Pakistan except that in Jordan induced abortion plays some role in determining the level of fertility.

Between the four populations, the effect of contraception is high in Java followed by Jordan, but very low in Bangladesh and Pakistan. The effect of postpartum infecundability is highest in Bangladesh, followed by Java and Pakistan; but very low in Jordan.

#### *Effect of Widowhood, Divorce and Separation on Fertility*

Wide variations in the incidence of marriage dissolutions due to widowhood, divorce and separation have been observed in these populations'. The effect of widowhood, divorce and separation on fertility is thus likely to vary across the four selected populations. It is difficult, if not impossible, to get estimates of the effects of these variables on fertility because data on the length of exposure of these events are not available. But on the basis of the simple assumption that ever-married women reported to be currently widowed, divorced or separated were not exposed to the risk of conception during the year preceding the survey, but would have been subjected to a standard schedule of fertility otherwise, we can estimate the percentage of births averted due to widowhood, divorce and separation.

TABLE 3

Age-specific fertility rates used in the analysis as natural fertility rates

Age (years)	Age-specific Fertility Rates*
15-19	0.411
20-24	0.460
25-29	0.431
30-34	0.395
35-39	0.322
40-44	0.167
45-49	0.024

Adapted from A.J. Coale and T.J. Trussell: "Technical note: Finding the two parameters that specify a model schedule of marital fertility", *Population Index*, 44(2):203-213 (1978).

Suppose  $f_i$ ,  $E_i$ ,  $W_i$ , and  $D_i$  denote the age specific natural marital fertility rate of ever-married, currently married, currently widowed, currently divorced and separated women in the 'i'th age group of a population, respectively. Then,  $\sum E_i f_i$  = Total number of expected births by all ever-married women in the population

$\sum M_i f_i$  = Total number of births by currently married women,

$\sum W_i f_i$  = Total number of births averted due to widowhood, and

$\sum D_i f_i$  = Total number of births averted due to divorce and separation.

Percentage of births averted due to widowhood =  $\frac{\sum W_i f_i \times 100}{\sum E_i f_i}$

Percentage of births averted due to divorce and separation  
=  $\frac{\sum D_i f_i \times 100}{\sum E_i f_i}$

Using the age-specific fertility rates reported by Coale and Trussell<sup>10</sup> as standard natural fertility rates (Table 3), the values of  $\sum E_i f_i$ ,  $\sum M_i f_i$ ,  $\sum W_i f_i$ ,  $\sum D_i f_i$  were calculated for the four populations and are presented in Table 4.

TABLE 4

Calculations showing the effects of widowhood, divorce and separation on fertility

	$\sum E_i f_i$	$\sum M_i f_i$	$\sum W_i f_i$	$\sum D_i f_i$	Effect of widowhood (%)	Effect of divorce and separation (%)
Bangladesh	1878	1697	99	82	5.3	4.4
Java	2716	2405	74	237	2.7	8.7
Jordan	1151	1117	18	16	1.6	1.4
Pakistan	1669	1596	33	40	2.0	2.4

In Bangladesh, the effect of widowhood on fertility is greater than that of divorce and separation. But in Java, the effect of divorce and separation is more than three times that of widowhood. The effect of both widowhood and divorce and separation seems to be low in Jordan and Pakistan.

Between the populations, the effect of widowhood in Bangladesh is twice that in Java, but more than three times that in Jordan, and more than twice that in Pakistan, which is undoubtedly due to differences in marriage patterns, such as age differences between husband and wife, as well as in mortality. The effect of divorce and separation in Java is twice that in Bangladesh, but more than six times that in Jordan, and more than three times that in Pakistan.

### Conclusion

The contribution of the intermediate variables—contraception, induced abortion and postpartum infecundability (lactation)—to levels in fertility varies

across the study populations. While it is mainly postpartum infecundability that accounts for the level of fertility in Bangladesh and Pakistan, postpartum infecundability in association with the use of contraception determines the level of fertility in Java. In Jordan, the effect of postpartum infecundability is the least as compared to the other three populations, but the effect of contraception is higher than in Bangladesh and Pakistan. Induced abortion was found to play some role only in Jordan. Thus, it is clear that the intermediate variables act differently in determining the levels of fertility in these populations.

The effect of widowhood was found to be highest in Bangladesh, but that of divorce and separation in Java. The effect of these two factors on fertility is comparatively low in Jordan and Pakistan. It is thus obvious that differences in the incidence of widowhood, divorce and separation have a considerable effect on the level of fertility in these four Muslim populations.

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# **ETHICAL ISSUES IN ABORTION, AMNIOCENTESIS AND STERILISATION**

**DR. AJIT C. MEHTA +**

## **Introduction**

Ethics and human values undergo changes from time to time for any given situation as these are influenced by many changing environmental factors which are not even uniform in different regions. With alterations in economic growth, social behaviour and attitudes, and in the political situation, ethics and human values are subjected to immense pressure. Rapid scientific advancement, lopsided urbanisation, spread of education, and expansion of health services, have added significantly to this dynamic process. Ethics is also sensitive to the legislative and administrative powers of various nations and to population growth.

Ethical issues in relation to abortion, amniocentesis, chorion villus sampling, and sterilisation have not been insensitive to the above interdependent stresses. And, therefore, what is considered right or wrong today in these matters, may not be so looked upon some time later. Nonetheless, one attempts to spell out minimum and uniform standards of ethics and human values, which could be applicable for a region or a larger area. Ethics is above mundane beliefs and practices. It implies morality and moral obligations. One has to also realise that what is morally right is not the same as what is legally right or permissible; and, this is so true of abortion, amniocentesis, and sterilisation. A discourse on ethical issues related to these procedures is, hence, bound to raise controversies. I am thus treading on a hot path.

Ethics may apply to: (a) the individual who seeks an abortion or one of the above-mentioned procedures, (b) the professional who exercises his skills for performing the procedure(s), (c) the administrator who provides the facility, and, (d) the legislator who makes laws on these matters. Additionally, it applies to the demographer and the social scientist who view with concern the altered pattern in society's structure and composition following the application of these methods on a large scale.

## ***Abortion***

Abortion performed for the sole purpose of the rejection of a pregnancy so as to avoid a normal birth is perhaps morally always wrong, and the more advanced a pregnancy, the more it hurts, were the views held by people during

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\* Paper read at the International Conference on Health Policy, Ethics and Human Values, New Delhi, 15-17 March 1986.

the past centuries and the first half of the present century. It is only during the last three decades that induced abortion has come to be seen differently. Ethics and the values attached to the procedure have undergone a radical change and abortion has come to be liberalised by law in many countries of the world, including India. Almost overnight, on 1st April 1972, Indian doctors and health administrators to whom abortion was immoral the previous day and who scorned at the 'abortionist', started performing them at the woman's request with zeal and a free mind. Whither went ethics and the human values associated with abortion? Furthermore, and very soon, doctors began to blatantly advertise and invite women to have abortions at their clinics. So ethics and the values of people changed fast; the shame, guilt and hurt attributed to abortion were forgotten. The so-called secrecy attached to pregnancy termination hardly seemed to matter to the woman or the health provider and abortion came to be accepted as a way of life.

What warranted such a drastic change in mental and emotional attitudes? Several factors contributed to it:

- (a) the pressures of economic hardships coupled with the desire of obtaining more material comforts and luxury,
- (b) the need for women to work outside their homes to sustain their families,
- (c) increasing education of women, their independent thinking, and the realisation that progeny is humanly controllable,
- (d) the breakdown of families into smaller units, and the distances at which family members started living as job opportunities widened,
- (e) the control of diseases resulting in increased longevity and rapid growth of population, and
- (f) the damaging effects of clandestine abortions and the financial exploitation connected with it.

What helped this change in attitude? The phenomenal progress in bio-engineering, the rational interaction between scientists and clinicians, as well as the bridging of communication gaps permitted extraordinary dissemination of knowledge and training. Skills which made abortion safe and effective were acquired rapidly all over the world. The morbidity and mortality associated with induced abortions fell, and acceptability increased. Governments conscious of the harm caused by abortions performed by quacks and of the misery of large numbers of children in the family brought in legislative reforms to contain these problems. Some were awakened by the steep rise of population growth rates.

In spite of justifying induced abortion, a few ethical issues may be discussed:

1. Up to which week of gestation should abortions be allowed? Is the arbitrary figure of 20 weeks still the right one? Are not many of the foetuses aborted at this advanced stage of pregnancy alive? Are we morally right in denying them the intensive antenatal care which can be offered to a similar foetus born out of a natural process? Does not abortion at 20 weeks tantamount to homicide or even genocide in certain circumstances? All these questions need urgent attention and probably revision downwards in the permissible scale. May be to 14 weeks.

2. As long as late mid-trimester abortions are lawful, is it ethical for governments to withhold the free availability of prostaglandins which are safe and effective? All European countries use prostaglandins as a good abortifacient agent, and many of us feel the same way in our country. It is not my contention that other methods are not safe and effective, but by depriving a large section of our population of the facility of prostaglandins, we are doing injustice to our women.

3. The method of aspirotomy by vacuum aspiration -- breaking up the foetus by a heavy ovum forceps, and removing the foetal parts -- apart from being not so safe, is more than unfair to the foetus. Despite some advantages of this method of mid-trimester pregnancy termination, ethically, it seems totally inappropriate to me.

4. The insertion of an intrauterine contraceptive device immediately following pregnancy termination does not attract medical ethics. Yet, it is propagated and even encouraged by incentive money. Undue anxiety and haste on the part of family planning programmers should not be allowed to overrule the medical complications which may occur consequently.

5. Women, not infrequently, use abortion as the only birth control measure. To what extent are we, the health providers, qualified to refuse abortion in this situation? There is a simultaneous fear that our refusal may drive the woman to adopt clandestine means which are unsafe.

6. And, finally, the ethics of public advertisement by abortion centres may be taken up if induced abortions are to be kept to a minimum. If they are to be considered as occasional events during the woman's reproductive period, and if this procedure is to be regarded as a way to tide over a mistake which has occurred once or twice, then the morality of the repeated and enticing advertisements remains questionable.

### *Amniocentesis and Chorion Villus Sampling*

There are three aspects of these techniques namely, the procedure; determining the sex or any other genetic make-up of the foetus; and using the technique for the subsequent rejection of a pregnancy.

1. Both procedures are employed in India. They are medically safe particularly when simultaneous ultrasound imaging is done. Once proficiency is obtained, the procedures are ethically acceptable.

2. Pre-natal determination of foetal sex for purely medical reasons is justified. Occasionally, pregnant women suffering from cancer demand sex determination prior to cancer treatment for the latter may harm the foetus. This is also acceptable. The accuracy of the two combined methods of Barr Body detection in females and of Y-chromosome fluorescence in males is very good when the tests are performed with care. Chromosome analyses are of course the best tests.

3. It is perhaps peculiar to India alone that pre-natal sex determination is employed solely for rejecting a foetus if it is of female sex. This practice is prevalent in urbanised places like Bombay and Delhi, with the full encourage-

ment of doctors. The ethical consideration of such selective abortions is a matter of great concern. To me, this practice is highly objectionable and repulsive. It is downright genocide. That the government and public institutions do not permit pre-natal sex determination for this purpose, is very creditable. However, private clinics and hospitals carry out these procedures incessantly and systematically. It surprises me that our government does not object to this most unethical business which has completely shattered human values. We have a distinguished women leadership in India, we have strong social and professional organisations of women, but, alas very few of them have voiced a protest against this preferential and deliberate killing. There is a foreseeable danger of demographic disturbances and social upheaval unless an immediate stoppage is ordered of the abortion of female foetuses.

### *Sterilisation*

Lastly, we should look at sterilisation. Sterilisations at the request of the couple after the requisite number of children have been born, seems legitimate. In fact, sterilisations have been carried out in India for the last fifty years. Both male and female sterilisations are medically safe, and neither is known to produce any objectionable complications or remote side-effects. Puerperal sterilisation is most suited for our country, with interval sterilisation as the next best. Yet, patient motivation is sometimes good for sterilisation with a pregnancy termination. It is immaterial whether one performs a laparotomy or uses the laparoscopic method. Intrauterine methods have not been perfected so far. Vasectomy by a single mid-line incision seems to be the best procedure. In fact, sterilisation appears to be the best approach for a permanent procedure.

The ethical issues which may be raised today about sterilisation are:

1. Sterilisation of young persons, below 25 years of age, even if the family is completed, should not be done. There is a reasonable chance of separation, divorce and death, and remarriage looms large on the minds of young people in such circumstances. Sterilisation of the spouse aged 25-35 years, and with two living children of less than 4 years of age, should be undertaken only after a thorough discussion with the couple. The couple should be informed about the high infant and child mortality in India and how it is being prevented by immunisation, as well as about the irreversibility of the operation. The immediate distress of the couple on the production of two children in quick succession does not often allow them to think calmly and with full understanding. Therefore, doctors, administrators or promoters should not play upon the couple's gullibility during this period as one does come across couples with mental and emotional problems which may be associated with such hasty steps.

2. Sterilisation, male or female, is a permanent method and it is meant to be so. Therefore wide publicity using euphemisms like 'reversible sterilisation' is not ethical. It only fools the lay public. Though sterilisation may be reversed in terms of establishing the patency of the vas or fallopian tube, the latter cannot guarantee a viable pregnancy. Moreover, reversibility involves an intricate and expert surgical operation at considerable cost and human effort. The ex-

expertise required for reversibility is not commonplace in India. Besides, no operation can be taken lightly; complications can occur at any time. We can ill-afford such disasters in matters of family planning.

Sterilisation and its reversibility is not like closing a water tap and re-opening it at will and easily. The ethics of the propagation of information on the 'reversibility of sterilisation' needs careful review. Let not a good method get a bad name by the thoughtlessness of a few persons. However strong the pressures may be to control population, to limit society's growth and reduce family size, incomplete and suppressed information to coerce people into acceptance of sterilisation is not correct. Such tactics never pay in a democracy. In fact, the experience in our country has already shown the contrary outcome; resistance grows and almost hatred builds up around the family planning programme.

3. The standard of patient care at sterilisation camps, the haste with which instruments are re-sterilised, the mad rush to perform large numbers of operations, and several other compromises made at camp sites, are all questionable. Camp sterilisations have fortunately already slowed down.

4. Finally, target-oriented programmes for IUD insertions and for sterilisation should be reassessed on ethical grounds. The targets are usually placed at extraordinarily high levels; few can attain them. The pressures of withdrawal of financial grants, of being reproached by the higher authorities, of being removed or transferred from the job, and the fear of not being able to bag the award, are so heavily thrust upon the minds of health care providers, that their attitudes towards the acceptors harden. Not only persuasion, but coercion and often compulsion creeps in. How quickly this boomerangs !

Targets must be reasonably placed and these should be reviewed and scrutinised carefully each year. The circumstances of and the scope for birth control measures undergo changes from time to time; blind and ever-rising targets defeat the purpose of family planning and population control programmes.

In conclusion, I wish to say that ethics and human values must be of a high order in policy formulation, programme implementation, training of personnel, and education of the public in matters of family limitation. Undue haste and hurry will not help solve the population problem. Crash programmes have achieved very little. Only deliberate and continuous efforts in the right direction, towards the goal, will succeed. Governments come and go, but these efforts and programmes must not be disturbed or dabbled with. Politicians must keep politics out of this high priority and highly sensitive issue of human endeavour.



# **THE SOLIGAS OF B.R. HILLS : A DEMOGRAPHIC STUDY**

**MR. G.B. VENKATESHA MURTHY +**

## **Introduction**

Although a number of institutions and individual scholars have been engaged in studying the demographic features of the Indian population at large, relatively little attention has been paid to the demographic study of tribal people. All Indian demographic studies have ignored the question of aboriginal populations. 'It has often been said that some of the tribes in India are decreasing numerically. Therefore, of late, efforts are being made to study and understand the demographic characteristics of Indian tribes.

According to the 1971 census, 0.79 per cent of the Karnataka population was returned as scheduled tribes. The Soligas of B.R. Hills comprise about 4.75 per cent of Karnataka's total scheduled tribal population. Of the 10,983 Soligas, 69 per cent inhabit Mysore district. Although several research studies have been carried out by anthropologists, none of these have highlighted the demographic features of the Soligas. An attempt has therefore been made in this paper to focus on some of their demographic characteristics.

The Soligas are a primitive, localised, docile tribe inhabiting the B.R. Hills of Mysore. They call their residence as 'Bodu'. Their deity is Biligiri Ranga. Hunting and forestry are their main occupations, but since forested areas are decreasing they have started agriculture as well. In recent times they have also taken up jobs in various government and commercial firms. They are concentrated in 23 villages spread over eight talukas of Mysore district. They have a peculiar dialect which is an admixture of Kannada and Tamil.

## **Data**

The data used in this paper are taken from two sources. One is the Indian census which gives information on the proportion of population by age, sex and fertility measures for the population in Karnataka. The second is a study on fertility, mortality and family planning conducted by the Population Centre, Bangalore from which data on the proportion of the Soligas population by age, sex and various measures of fertility are taken.<sup>2</sup> The study by the Population Centre covered all the Soligas inhabiting the 23 villages by adopting the census survey method. The study used a structured interview schedule for collecting the data. Data on fertility were collected from all currently married women in age group 15-49. Thus, in all, 522 currently married women were surveyed for fertility analysis between September and December 1981.

## Results

Among the Soligas enumerated in the survey, 1566 were males and 1517 were females. The sex ratio worked out to be nearly 969 females per 1000 males, which is higher than that of the general population of Karnataka State. Since the sex ratio of the population at the point of survey was higher than the sex ratio at birth it would be reasonable to expect that female mortality among the Soligas is relatively lower than male mortality. This pattern of differential mortality by sex has also been observed among other tribal communities in India.<sup>3</sup> However, in general, a low sex ratio usually reflects female disadvantage in relation to mortality because of unfavourable social and cultural values. The Soligas are no exception to this phenomenon.

A distribution of the population by broad age groups and sex for Karnataka state as well as for the Soligas is presented in Table 1. It shows that almost 42.6 per cent of the population enumerated was below 15 years of age and around 0.8 per cent was in the 70+ age group. A comparison of the age structure of the Soligas' population with that of the State's population indicates that the former was relatively younger. The difference is probably due to differences in fertility levels. The age structure of the population being young suggests that the birth rate among the Soligas would be much higher than the birth rate of Karnataka.

TABLE 1

Per cent distribution of the population of Karnataka State and the Soligas by age and sex

Age group (years)	Karnataka*			Soligas		
	Male	Female	Total	Male	Female	Total
0-14	39.17	40.00	39.57	42.53	42.65	42.59
15-49	48.02	47.54	42.20	47.45	48.46	47.94
50-69	10.48	9.92	10.21	9.06	8.30	8.69
70+	2.33	2.54	2.42	0.96	0.59	0.78
Total	100.0	100.0	100.0	100.0	100.0	100.0

\* Based on smoothened age distribution of 1981 census

Source: — Census of India 1981, Paper 5 of 1984: Age tables based on 5 per cent sample data, p.53.

We have noted earlier that the sex ratio among the Soligas is favourable to males. However, in the age group 0-14, the estimated sex ratio worked out to 971 which is slightly higher than the sex ratio at birth. Thus, it is evident that childhood mortality among Soligas boys and girls was more or less the same. An interesting feature was noticed in the 15-19 age group. Contrary to expectation, the sex ratio was favourable to females, probably because maternal deaths were comparatively fewer among this tribal population. Further investigations may throw some light on this aspect.

### *Mortality*

Data on deaths which had occurred in the year preceding the survey were collected. Attempts were also made to collect data on infant deaths as well as the cause of such deaths. Since the Soligas' knowledge about the cause of death was poor, we have not tried to analyse the cause of death.

The crude death rate and infant mortality rate of the Soligas was 18.5 and 138 respectively whereas for Karnataka state, the corresponding rates were 9.6 (1986) and 82 (1978). The estimates of the death rate indicate that as compared to the mortality rates of the total population, the mortality rates of the tribal population were high, the mean number of deceased children per currently married woman being around 6. However, when analysed by age, the mean number of deceased children was lower in the younger age groups as compared to the older age groups. Malnutrition, inadequate knowledge of health care, and lack of accessibility to medical and health institutions could be some of the reasons attributed to the high mortality rates. The death rate of the Soligas corresponded with the estimated death rate of a tribal population from southern India which was 18.6. <sup>4</sup> The crude death rate among the Soligas seems to have remained constant during the period 1971-81. The infant mortality rate for Karnataka state was also very low as against the Soligas' population whose infant mortality rate was 138 per 1000 live births. Since the level of infant mortality is an index of the overall health status of a community, it is needless to mention that they do not seem to enjoy good health conditions. The already existing health programmes such as ante-natal and post-natal care and immunisation programmes seem to have had no impact on this tribe which lives in a remote, dense forest.

Fertility measures such as the crude birth rate, general fertility rate, gross reproduction rate and total fertility rate have been presented in Table 2. The findings indicate that the crude birth rate among the Soligas was higher than that of Karnataka which is 27.2. As noted earlier, the high birth rate among the Soligas is in accordance with the young age structure of the population. Their general fertility rate was similarly higher, being around 188. The gross reproduction rate of the Soligas was 2.89 whereas for Karnataka it was 2.34. This would imply that on average, a Soliga woman would survive till the completion of her reproductive period and would give birth to 2.89 female children. The completed family size among the Soligas was 5.64. The high level of fertility among the Soligas is in correspondence with the birth rate estimated by Sinha<sup>4</sup> for a tribal population of the southern region. It is also evident that fertility is still high and has remained constant during the period 1971-81. The persistence of high fertility leads us to inquire into the marriage patterns of the Soligas.

Marriage is universal among the Soligas. The age at marriage is to a large extent influenced by age at menarche. The mean age at menarche among the Soligas is 13.2 years. However, the age at marriage is 14.2 years which is very early. Thus, there is not much of a gap between the age at menarche and age at marriage.

TABLE 2

Current measures of fertility for the Soligas and for Karnataka State

	Karnataka, 1981	Soligas (1981 Survey)
Crude Birth Rate	27.6*	44.75
General Fertility Rate	N.A.	188
Gross Reproduction Rate	2.24**	2.89
Total Fertility Rate	4.61	6.16

Sources: – \* Crude birth rate refers to 1980 calendar year(SRS)

\*\* Calculated from adjusted TFR by Brass (P/F) method from Population Projection for Karnataka, 1981-2000, Institute for Social and Economic Change, 1985, p.21.

Another interesting feature among this tribal population is that widow remarriage and divorce are commonly practiced. Widow remarriages and divorce are often called 'Kudavali'. This is nothing but consensual co-habitation between a widow and widower or between two divorced persons. Since the practice of remarriage is so common, the proportion of those widowed and separated constituted just about 6 per cent. Early age at marriage, the prevalence of a high incidence of marriage among widowed and divorced persons, illiteracy, rural residence and low levels of family planning acceptance seem to be responsible for the high fertility among the Soligas.

The crude birth rate of 44 and crude death rate of 18 per 1000 indicate that the Soligas' population has a tendency to grow; the current natural growth rate being around 26 per 1000 population.

### *Family Planning*

Information on family planning knowledge and practice was also elicited from the respondents. Ninety per cent of the currently married women were aware of terminal family planning methods. Seventy three women reported that either they or their spouses had accepted sterilisation. This gives a protection (effective) rate of 14 per cent of all currently married women. Some of the Soligas women also reported the use of temporary methods like the oral pill and IUD. This percentage was insignificant. However, a few stated that they consumed a juice extracted from the green leaves of a particular plant as a contraceptive, though they were not specific in their answers. <sup>2</sup>

A distribution of the sterilisation acceptors by the mean number of living children and living children by acceptors are presented in Table 3. On average, each acceptor had 3.4 living children. About half of the acceptors had three or fewer children, and about one-third had five or more children. About 46 per cent of the acceptors were below 35 years of age and had an average of 2.8 children.

TABLE 3

## Characteristics of sterilisation acceptors among the Soligas

Age group (years)	Number of acceptors	Mean number of living children	Acceptors by living children	
			Acceptors	Living Children
20-24	1	2.0	2	0
25-29	20	2.9	6	10
30-34	12	2.8	10	2
35-39	10	2.9	18	3
40-44	12	4.2	14	4
45-49	17	4.2	22	5

**Summary**

The Soligas have a young age structure. The sex ratio is favourable to males. The sex ratio at the time of the survey was greater than that at birth indicating that the difference in male and female mortality among the Soligas was decreasing. The crude death rate and infant mortality rate was high probably due to the fact that they live in an interior forest area lacking in health facilities.

Fertility in terms of the total fertility rate was 6.16 whereas completed family size was 5.64. Early age at marriage, widespread remarriages of widows and divorced persons and the low level of family planning acceptance were perhaps some of the main reasons which contributed to this high level of fertility.

Around 90 per cent of the currently married women were aware of terminal family planning methods. The acceptance rate of terminal methods was 14 per cent.

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# **MATERNAL AND CHILD HEALTH AND FAMILY PLANNING : PERCEPTIONS AND LINKS**

**DR. L. RAMACHANDRAN +**

## **Introduction**

The integration of family planning and maternal and child health (MCH) services was planned in the early 1970's. The Central Family Planning Council recommended in September 1972, the integration of public health and family planning services at the peripheral level. The reasons for the merger of the family planning and MCH services were:

1. Timely and adequate ante-natal care can act as a motivating factor for contraception after the birth of the child.
2. If hospitalisation occurs at the time of birth, close contact with the doctor and paramedical staff could induce the acceptance of contraception.
3. Proper utilisation of MCH services ensures better health of the child and its survival. The psychological assurance given to the mother helps in taking a decision for contraception.
4. By providing health and family planning education together, it is possible to link the benefits of spacing and small family size to the mother's health.

## **Objectives**

The aim of this study is to ascertain the extent to which the objectives of the integration of family planning and MCH services have been fulfilled within the existing health delivery system. Specifically, the intention is to evaluate the extent to which family planning use is linked with MCH acceptance. The study adopts a user base to examine the problem. It is designed to obtain an understanding of how women perceived existing MCH and family planning services, their understanding of the health implications of the services and their utilisation of MCH services. By examining the MCH knowledge, attitude and practice of mothers, the study intends to determine the extent to which contraception was undertaken with the direct or indirect influence of MCH care.

The objectives of the study are to examine:

1. The perception and experiences of acceptors of family planning about MCH care services.
2. The influence of MCH care on the acceptance of contraception, and
3. The extent of decision-making for contraception in the absence of any knowledge or experience of MCH care.

It will be seen that objectives 2 and 3 are complementary to each other.

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### **Maternal and Child Health and Family Planning : A Brief Review**

Studies in the international field on the relationship between MCH and family planning have shown mixed results due to differences in local conditions, health infrastructure and government policies. A UNFPA sponsored study<sup>1</sup> in four countries—Indonesia, Philippines, Nigeria and Turkey, found in the case of Indonesia, a “significant association between pre-natal and post-partum examination by the nurse and use of modern contraception”. In the Philippines, there was a drop in the crude birth rate in the project area from 39/1000 in 1975 to 34/1000 in 1979. However, the decline in the crude birth rate has been attributed to the IUD home insertion training programme for mid-wives and audio-visual team activities and not to maternal and child health services.

National studies undertaken on the integration of family planning and health services have stressed the delivery and effectiveness of various components of the integrated programme. A study in Gujarat<sup>2</sup> identified the strengths and weaknesses in the implementation of the Multipurpose Worker (MPW) scheme. Another study<sup>3</sup>, analysing performance data at the integrated and non-integrated level in Gujarat, concluded that the health programmes in the integrated areas had shown a marginal improvement in the utilisation of health and family planning services over the other areas.

Studies<sup>4,6</sup> undertaken in many parts of the country have shown that the coverage of maternal and child health was consistently poor and that peripheral staff at the Primary Health Centre level were primarily concerned with fulfilling family planning targets. However, little empirical evidence exists on the impact of maternal and child health on family planning acceptance and very few studies have analysed the maternal and child health/family planning relationship from a user perspective. Existing studies have concentrated on the delivery side of the integrated family planning and health services. While the importance of maternal and child health care cannot be undermined, its synergistic effect for family planning motivation has not been clearly established.

### **Study Design and Data**

The sample for the study was drawn from the rural and urban areas of Dindigul district, Tamil Nadu. The sample comprises of 1200 currently married women in the reproductive ages who had accepted some method of family planning. Of the total sample, about 800 had used permanent methods and 400 were using temporary methods. Respondents were randomly selected from the records of the urban family welfare centres of the District Government Hospital.

The study is retrospective in nature and respondents were contacted and interviewed at their residence with a pre-tested questionnaire. The interviews were conducted by three investigators who were given training in administering the questionnaire. The interviews were completed within a period of four months. The study wished to focus in the major part on collecting information on the influence of MCH care on family planning adoption and to facilitate this objective, the sample was restricted to family planning acceptors.

The operational definitions of ante-natal and child health services as used in the study are as follows:

**A. Ante-natal Services:**

1. Check-up includes physical examination to ensure that the foetus is alive and in a normal position; and to detect any abnormalities.
2. Immunisation against tetanus.
3. Supplementary iron tablets as a prophylaxis against anaemia.

**B Child Health Services:**

1. Immunisation includes DPT (3 doses), BCG and measles vaccine.
2. Nutrition includes vitamin A concentrate and iron and folic acid in the form of drops or tablets.
3. Treatment of minor ailments includes treatment for diarrhoea, cold, cough, conjunctivitis and discharge from the ear.
4. Deworming
5. Treatment of scabies

**MCH and Family Planning Delivery Services in Project Area**

The infrastructure for the delivery of MCH and family planning services

**TABLE I**

**Government Health Centres and staff in Tamil Nadu and at the All India level**

	Tamil Nadu		All India	
	Number	Per 100,000	Number	Per 100,000
<i>Govt Health Centres</i>				
PHC (as of 1.4.84)	405	1.2	5,959	1.1
Rural Sub Centres (as of 1.4.84)	4,586	14.1	65,643	12.5
Urban Family Welfare Centres (as of 1.4.83)	272	1.7	2,583	1.7
<i>Staff</i>				
ANMs and LHVs (as of 30.6.83)				
Rural	656	2.0	40,176	7.6
Urban	186	1.2	3,169	2.0
Trained Dais (as of 1.4.83, i.e. since inception of the training programme in 1974-75)	22,867	70.4	443,588	84.4
Medical Officers				
Rural	301	0.92	5,411	1.02
Urban (as of 30.6.83)	61	0.38	1,166	0.73

*Source* - "Family Welfare Programme in India," Year Book 1983-84 Ministry of Health and Family Welfare, Government of India, New Delhi (1985).

is provided through a network of Primary Health Centres (PHC) and Sub-centres in rural areas and Urban Family Welfare Centres and Post-partum Centres in urban areas. The basic maternal and child health services offered by these centres are:

- \* Supervision of health of the pregnant mother through ante-natal care.
- \* Provision for safe and aseptic child birth
- \* Post-natal care of the mother and the new born child.
- \* Early initiation and maintenance of breast-feeding, timely immunisation against infectious diseases, control of diarrhoea and promotion of nutrition.

In order to present a profile of the level of health services in the project area, relative to the national situation, Table 1 gives the number of health centres and health personnel in Tamil Nadu with corresponding all India figures. The health centres in Tamil Nadu are on par or higher than the all India average. However the staff in position in Tamil Nadu is much lower than the all India average. There are 2.0 ANMs and LHVs per 100,000 population in rural Tamil Nadu compared to 7.6 per 100,000 at the all India level; 0.9 Government Medical Officers per 100,000 in rural Tamil Nadu, and 0.38 in urban Tamil Nadu compared to 1.02 and 0.73 respectively for the country

TABLE 2

**Tamil Nadu and All India targets and achievements of MCH and family welfare activities, 1983-84**

	Tamil Nadu		All India	
	Total	% Achievement of target	Total	% Achievement of target
<i>MCH Activities</i>				
Tetanus Immunisation for expectant mothers	470,800	58.9	8,194,062	71.3
DPT Immunisation for children	890,769	81.0	11,127,208	76.3
D.T. Immunisation for children	823,656	91.5	10,527,013	81.0
Prophylaxis against nutritional anaemia:				
Women	675,186	84.4	17,179,182	144.4
Children	919,273	114.9	16,032,172	134.7
Prophylaxis against blindness due to Vit. A deficiency	1,390,344	63.2	16,937,983	67.8
<i>Family Planning Methods</i>				
Sterilisation	496,780	124.5	4,521,750	76.8
IUD	55,877	33.3	2,130,831	85.2
Other (condom, oral pill etc.)	77,683	23.3	8,213,441	91.3

Source: "Family Welfare Programme in India," Year Book 1983-84, Dept. of Health and Family Welfare, Government of India, New Delhi (1985).

Table 2 presents the targets and achievement of MCH activities in Tamil Nadu and at the all India level for 1983-84. In terms of achievements of targets in 1983-84, Tamil Nadu was below the all India average for tetanus immunisation of expectant mothers, prophylaxis against nutritional anaemia for women and children and prophylaxis against blindness due to Vitamin A deficiency. Tamil Nadu recorded a higher percentage of achievements of targets for child immunisation: 81 per cent for DPT and 91.5 per cent for D1 compared to the all India average of 76.3 and 81 per cent respectively.

For family planning targets and achievements in 1983-84, Tamil Nadu recorded a target achievement of 124.5 per cent for sterilisation indicating the success of the sterilisation programme in the State. The predominance of sterilisation in Tamil Nadu is evident from the target achievement for IUD and other methods (condom, oral pills etc.) which was only 33 and 23 per cent respectively (Table 2). The all India target achievement was lower than Tamil Nadu for sterilisation (77 per cent) but higher for IUD (85 per cent) and other methods (91 per cent).

## Results

### *Profile of Respondents*

A profile of the 1200 women interviewed for the study indicated that of the total sample, 78.3 per cent were from rural areas, 38.0 per cent were literate and 66.6 per cent were working. The mean age of the respondents at the time of the interview was 33.0 years and the mean age at adoption of contraception was 31.9 years. Therefore, acceptance of contraception occurred between 1 to 2 years prior to the interview. Sterilisation was the dominant form of contraception comprising 68.5 per cent of the respondents. The use of spacing methods was very low (31.5 per cent). The proportion using a spacing method deliberately to prolong the inter-birth interval was considerably lower (12.8 per cent), indicating that the use of contraception was primarily for terminating family size. As many as 87 per cent did not want any more children.

### *Perception of MCH Services*

Paramedical staff have two main responsibilities—providing motivation and services for family planning and delivering basic MCH services. Table 3 presents the family planning and maternal and child health services given by different health personnel. The auxiliary nurse midwife (ANM) was the single major source of family planning health care reaching about 46 per cent of the respondents. The table also indicates that the ANM provided uniform all-round care including family planning advice and ante-natal and post-natal care to the population serviced.

The untrained dai was the next major source of maternal care. However, it is evident that the untrained dai did not integrate maternal and child health with family planning; while she serviced 22 per cent of the respondents for mater-



TABLE 3

Percentage distribution of acceptors by use of health personnel and type of service

N = 1200

	Ante-natal Care	Attended last delivery	Post-natal Care	Child Health Services	Advice to adopt FP
<i>Health Person</i>					
ANM/LHV	46.2	45.3	46.3	19.3	47.4
Trained Dai	9.3	9.6	9.6	—	4.8
Untrained Dai	21.2	21.3	21.3	—	5.6
Doctor	11.6	12.2	11.4	79.4	5.6
<i>Non-Health Person</i>					
Relatives/Neighbours/ Others	11.8	11.6	11.5	0.2	13.3
No one	—	—	—	1.0	23.2

nal health, she provided family planning advice to as few as 5.6 per cent (Table 3). Untrained dais had somewhat greater contact with the respondents than trained dais (9 per cent). The trained dai was more likely to give family planning advice than the untrained dai. Table 3 shows that the trained dai attended the last delivery of 9.6 per cent of the sample and gave family planning advice to 4.8 per cent of the women.

To examine the links between maternal and child health care and family planning acceptance, it is necessary to know the terms by which the target population perceives maternal and child health care. Respondents were asked about their knowledge of the specific advantages of maternal and child health care.

TABLE 4

Percentage distribution of advantages of MCH care

N = 1200

Advantages of MCH Care	Percentage
Unaware of Advantages	53.8
Aware of Advantages	
Safe delivery	20.7
Prevents infant mortality	12.2
Prevents malnutrition	3.2
Good child care	10.2
Mother's health	0.1

Table 4 shows that 53.8 per cent of the respondents were not aware of any advantage of maternal and child health care. Among those who perceived advantages of maternal and child health care, safe delivery was cited as the premier advantage (20.7 per cent) followed by prevention of infant mortality (12.2 per cent). Other important components of maternal and child health care such as malnutrition, child care and mother's health were hardly recognised as advantages.

The results indicate that among the 46.2 per cent aware of advantages of maternal and child health care, there lacked a holistic perception of maternal and child health care. Consequently, important benefits of maternal and child health care were not perceived by the respondents.

It was found that demographic variables such as age, education and area did not have a significant influence on the perception of the advantages of maternal and child health. However, in the case of occupation, working women were more inclined to be unaware (62.6 per cent) of maternal and child health advantages than non-working women (37.2 per cent).

#### *Utilisation of MCH Services*

Perceptions of maternal and child health care and services should be viewed with the actual use of ante-natal and child health services. In the use of ante-natal services, immunisation ranked high covering 92.3 per cent of the respondents (Table 5, Panel A), followed by regular check-up (64.5 per cent). Nutritional care was negligible with 0.7 per cent reporting use of nutritional services during the ante-natal period. The integrated use of ante-natal services was much lower, 57.5 per cent availed of immunisation and regular check-up services.

**TABLE 5**

**Percentage distribution of use of ante-natal and post-natal services by acceptors**

**N = 1200**

Services	Acceptors
<b>A. Ante-natal Services.</b>	
Immunisation	92.3
Regular check-up	64.5
Nutrition	0.7
<b>B. Child Health Services</b>	
Immunisation (at least one dose)	87.5
Nutrition	72.0
Deworming	1.6
Treatment of minor ailments	4.1
Treatment of Scabies	1.9

In the use of child health services, 87.5 per cent reported immunisation of children (Table 5, Panel B). When reviewing the immunisation rate, it should be noted that all the respondents were acceptors and 68 per cent were sterilisation cases indicating definite contact with a doctor. However, respondents were unable to identify the types of immunisation and the number of doses required. The use of nutritional services for children was 72 per cent. There was minimal utilisation of other child health services such as deworming, treatment of minor ailments and treatment of scabies (Table 5, Panel B).

The rate of immunisation for maternal and child health was high among respondents. Ante-natal immunisation was 92 per cent and 87 per cent had their children immunised (at least one dose). These figures are higher than the corresponding Tamil Nadu and all India figures presented in Table 2. The high rate of immunisation can be attributed to the targets set for immunisation under the expanded immunisation programme.

The results on the utilisation of ante-natal and child health services indicate an absence of integrated use of maternal and child health services. Services crucial to child health (deworming, treatment of minor ailments and treatment of scabies) had scant utilisation whereas the use of immunisation was widespread. Similarly, among ante-natal services, nutritional services for mothers were barely utilised (0.7 per cent) while immunisation was high.

Almost all respondents (over 90 per cent) had used some form of ante-natal and child health services. However, when asked about the components of the maternal and child health programme, more than half of the respondents were unable to identify any of the maternal and child health services provided by the government. The underutilisation of vital maternal and child health services such as nutrition etc. provided by the government could be attributed to the inability of the target population to perceive the uses and benefits of the different maternal and child health services and to link them to the health of the mother and child. An understanding of the different components of maternal and child health is essential because services such as immunisation require double and triple doses. If the target population is to return for the second and third doses, a clear idea of the advantages of maternal and child health care would serve as sufficient motivation.

### *Acceptance of Family Planning and Perception of Maternal and Child Health*

Respondents were asked the reasons for adoption of family planning. The two main reasons for acceptance of family planning were to limit families (48.8 per cent) and to avoid risks and complications (41.8 per cent). The avoidance of risks and complications was considered a health related reason for adoption of family planning. Only 6 per cent adopted family planning for spacing their families reflecting the predominance of terminal methods. Adoption of family planning for economic reasons was mentioned by only 3.4 per cent of the respondents.

In a separate question, respondents were asked reasons for maternal and child health acceptance. Table 6 shows that 53.9 per cent could not cite a reason

for maternal and child health use. The avoidance of risks and complications to the mother and child was the most cited reason for maternal and child health use (33.1 per cent) followed by free maternal and child health services provided by the government (10.2 per cent) and advice of others (3.9 per cent).

TABLE 6

Percentage distribution of reasons for MCH use by reasons for FP adoption

Reason for MCH use	Reasons for FP adoption		Total
	Health related reasons	To limit families	
To avoid risks and complications to mother and child	31.9	32.5	32.1
Free MCH services provided by Government	4.8	15.0	10.2
Advice of others	5.8	2.4	3.9
Unable to cite reason for MCH use	57.8	50.0	53.9
	(100%) N = 502	(100%) N = 586	(100%) N = 1200

The reasons for use of maternal and child health services need to be examined with the reasons for adoption of family planning in order to fully understand the unclear perception of the maternal and child health programme among respondents.

Table 6 demonstrates a break-up of the two major reasons for the adoption of family planning—(i) health reasons (avoidance of risks and complications to the health of the mother and child); and (ii) to limit families by reasons for maternal and child health use. The findings indicate that among the 502 respondents (41 per cent) who said they adopted family planning for health reasons, only 160 (31.9 per cent) were able to make the connection that the reason for utilisation of maternal and child health services was to avoid risks and complications to the mother and child. As many as 57.8 per cent of those who accepted family planning for health reasons were unable to give a reason for the use of maternal and child health services implying an unawareness of the health implications of maternal and child health care.

From the 586 (48.8 per cent) respondents who accepted family planning for limiting their families, the necessity of ante-natal check-up was the major reason for the use of maternal and child health services (32.5 per cent). Free maternal and child health services provided by the government was cited by 15 per cent of the respondents.

The above findings clearly show that there exists an underlying link between maternal and child health services and family planning acceptance. But

the constraint in the emergence of a clear cause and effect relationship between maternal and child health and family planning lies in the inadequate and unclear understanding of the maternal and child health programme by the respondents. This blocks the comprehension of the health implications of maternal and child health services.

## Discussion

### *Links between Family Planning and Maternal and Child Health:*

The purpose of the study was to ascertain the influence of maternal and child health care on the acceptance of family planning within the government health delivery system which offers integrated family planning and maternal and child health services. Among the reasons cited for the merger of family planning and maternal and child health services (see Introduction) was the creation of a favourable climate for family planning motivation through the provision of maternal and child health care. The data from the present study shows that 53 per cent of the respondents were unaware of the uses, benefits and components of maternal and child health care. In other words, more than half the respondents were not aware that the government health services included both family planning and maternal and child health services. In view of the low awareness of the advantages and components of maternal and child health services among respondents, the direct links between maternal and child health care and family planning acceptance are weak.

However, there is some support for an indirect link between maternal and child health and family planning adoption. Even though respondents were unable to articulate the uses and advantages of maternal and child health care, when asked about specific maternal and child health services, over 90 per cent stated that they have used some component of maternal and child health for ante-natal, post-natal, and child care. The respondents, all family planning acceptors, were more likely than average to have used some part of maternal and child health care suggesting indirect links between maternal and child health and family planning.

Apart from immunisation, most other maternal and child health services registered low utilisation resulting in a recurring pattern of partial use of ante-natal and child health services. For ante-natal care, the use of nutritional services was negligible. Nutrition and regular check-up are major parts of ante-natal care and are vital to the mother's health during pregnancy.

Child health services included deworming, treatment of minor ailments and treatment of scabies in addition to immunisation and nutrition. The former three services had very low levels of utilisation (Table 5, Panel B) indicating disparate use of child health services.

It is clear from the above discussion that maternal and child health services were not utilised in an integrated manner. There are two factors of relevance to the study which could be attributed to the low use of integrated maternal and child health services.

### *1. Lack of All-round Provision of Maternal and Child Health*

The integration of family planning and health services resulted in the health worker having to provide multiple services ranging from family planning to maternal and child health to primary health care. Under such circumstances unless the government health workers (ANM, LHV, trained dai) are adequately trained in the delivery of all-round services or are available in large numbers (in Tamil Nadu there are 2 ANMs per 100,000 population, Table 1), it is unlikely that they will provide all maternal and child health services. The study shows that the ANM reached a little less than half (45 per cent) the respondents, was able to give family planning advice to all, but gave some form of child health services to less than half (19 per cent) the population she serviced.

### *2. Lack of Awareness of Maternal and Child Health Services by Target Population*

Poor knowledge of maternal and child health services and the inability to perceive the health worker as the provider of integrated family planning and maternal and child health services could account for the underutilisation of most maternal and child health services. This finding is corroborated by a study<sup>8</sup> on the implementation of the multipurpose worker scheme which concluded that the user group (target family planning couples) was not aware of the delivery of all health services by one worker.

The present study also found that due to insufficient understanding of the structure, uses and advantages of maternal and child health care, acceptors could not make the cause and effect link between maternal and child health and contraception.

### *Two-way Interactional Effect*

The study set out to examine the influence of maternal and child health care on family planning acceptance. However, some of the data shows that the relationship between maternal and child health and family planning is not linear but reciprocal, i.e. not only is maternal and child health expected to affect family planning but also the acceptance of family planning could lead to the use of post-natal maternal and child health services. This is possible especially in the case of tubectomy where contact with a doctor is assured.

In the present study doctors accounted for 79 per cent of the child health services provided. For ante-natal care, attendance at last delivery and post-natal care, the doctor reached only 11 per cent of the respondents (Table 3). One of the reasons for the high use of doctors for child health care could be that 68 per cent of the respondents were acceptors who were sterilised. Also, many sterilisations are done during the post-partum period. It may be inferred from the above results that adoption of family planning preceded the use of child health services in many cases. However, more research is required to understand the nature of the symbiotic relationship between maternal and child health and family planning.

### Implications

The results of the study indicate strong implications for strengthening the health information and education system within the community. Specifically, policy makers and health administrators need to pay more attention to the following areas:

1. Information on the different and lesser known components of maternal and child health care such as treatment for scabies and minor ailments, deworming, regular check-up, nutrition etc must be provided to the community
2. It is important that knowledge about maternal and child health care is introduced as a whole package of services. The health implications of the integrated use of maternal and child health services should be stressed as also the health implications of the adoption of family planning
3. The target population must be able to identify the health worker as a provider of both family planning and maternal and child health services.
4. An understanding among users of the uses and benefits of maternal and child health care is a necessary prerequisite for establishing direct links between maternal and child health and family planning acceptance

The study implies that from the health delivery side it is vital that health workers make a concentrated effort in the consistent provision of maternal and child health services in addition to family planning services. During the training of health workers, it is necessary to emphasise the integrated nature of the family planning and health services and to assure equal treatment to both services. As the health worker has to fulfill family planning and immunisation targets, allied components of the maternal and child health programme such as health education, nutrition and ante-natal check-up should not be neglected.

The results of the present study suggest several areas for further research to study the relationship between maternal and child health care and family planning adoption. It would be of use to trace the patterns of maternal and child health use between women who adopted contraception to limit families and those who adopted family planning to space families. The processes which produce reciprocal effects on maternal and child health and family planning require closer study. More detailed study on the actual use of maternal and child health services in terms of the quality of maternal and child health care given is also required.

### Conclusion

In conclusion the study shows that both awareness of the maternal and child health programme and utilisation of the full range of services provided by the programme were generally low. However, particular ante-natal and child health services, for example, immunisation and nutrition for children were available to by the large majority of respondents, indicating partial use of the available

services. These findings imply that the integrated nature of the maternal and child health and family planning programmes is not perceived by the target population. The conclusions raise the need for a more comprehensive community health education programme, covering information on both availability of health services and their uses and benefits.

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# **TRANSITION OF NRR : AN INTERNATIONAL EXPERIENCE**

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## **Introduction**

As early as in the 1960's the Government of India stressed the imperative need to stabilise the country's population. However, no concerted efforts were made to realise the goal. In fact, we are still far from achieving the goal of a crude birth rate (CBR) of 25 per 1000 population which was supposed to be reached by 1973; let alone the goal of stabilising the population size. Nevertheless, the Working Group on Population constituted by the Planning Commission in 1978, recommended a long-term demographic goal of attaining a Net Reproduction Rate (NRR) of unity by 1996; now to be achieved by 2006-11 as per the Seventh Five Year Plan (1985-90), which is the first step towards zero population growth.

In view of the urgency of achieving  $NRR = 1$  in India as early as possible and also for a better understanding of the transition in NRR, an attempt has been made in this paper, to study the past levels of NRR, the pattern of decline in NRR over a period of time, and some associated factors in a few selected countries namely Czechoslovakia, Denmark, the United Kingdom, France, Norway, Italy, Finland, Bulgaria, Poland, Australia, Yugoslavia, the Netherlands, U.S.A., Japan, USSR, Canada, New Zealand and Singapore, where  $NRR = 1$  has already been attained. Further, an attempt has been made to examine the prospects of the long-term demographic goal set for India in the light of the experience of these countries.

## **International Comparison of NRR**

Table 1 represents the highest level of NRR and related demographic parameters for the selected countries while Table 2 presents the demographic parameters for the period when these countries achieved NRR of unity or were very close to it.

Table 1 indicates that the highest NRR for Non-Jews of Israel (3.56) or for Singapore (2.39) was the outcome of high fertility and low mortality. In fact, the maximum value of NRR for these selected countries, except for a few like Italy, Bulgaria, Poland and Yugoslavia which have achieved  $NRR = 1$ , was invariably a result of high fertility (not by Indian standards) and substantially

TABLE 1

The maximum value of NRR and related demographic and  $\frac{1}{2}$ social parameters for selected countries which have achieved NRR of unity

Country	Time period	NRR	CBR	CDR	IMR	e° (Comb(F)-ined)	SMAM Circa 1950	Percent 20-24	Single 45-49
Czechoslovakia	1950-54	1.31	20.7	9.0	53.9	67.8	23.0	54.1	9.5
Denmark	1946-49	1.32	20.3	9.1	29.0	70.0	23.1	59.0	15.5
U.K.	1960-64	1.32	16.9	11.2	21.6	74.0	22.1	41.3	8.7
France	1960-64	1.34	17.1	10.6	24.9	74.3	22.9	55.7	9.1
Norway	1960-64	1.36	16.8	8.9	20.0	75.4	20.2	49.7	13.0
Italy	1921-25	1.37	29.8	17.4	128.8	50.0	—	—	—
Finland	1946-49	1.48	25.3	10.3	35.0	65.4	22.8	59.0	18.7
Bulgaria	1921-26	1.53	39.6	21.3	156.8	46.5	21.0	21.4	2.4
Poland	1950-54	1.55	27.9	9.9	94.5	63.9	—	41.0	9.0
Australia	1960-64	1.59	21.7	7.8	19.6	74.0	22.5	40.3	5.9
Yugoslavia	1949	1.62	28.0	12.3	130.0	57.8	22.2	43.5	5.8
Netherlands	1946-49	1.63	25.7	7.7	25.0	71.3	24.4	69.2	13.5
U.S.A.	1955-59	1.73	23.9	8.0	26.4	72.8	20.8	32.3	7.9
Japan	1947-49	1.73	32.0	11.9	52.0	57.8	23.5	55.3	1.5
U.S.S.R.	1926-27	1.77	38.0	—	—	45.0	—	—	—
Canada	1955-59	1.82	27.6	6.9	30.1	73.2	21.7	40.5	8.9
New Zealand	1960-64	1.87	25.0	8.0	20.6	73.9	21.8	40.5	8.3
Singapore	1963	2.39	34.0	4.8	30.4	68.4	20.8	33.0	4.9
Israel (Non-Jew)	1970	3.56	45.4	4.2	—	72.3	—	—	—
India*	1961	1.64	40.9	22.0	138	40.6	15.8	6.0	0.5
	1971	1.82	41.2	19.0	128	44.7	17.2	9.5	0.5
	1981	1.80	37.1	14.8	115	54.7	18.3	10.1	0.4
Mean** ( $\bar{x}$ )		1.59	25.43	10.3	52.86	66.85	22.2	46.0	8.9
S.D.** ( $\pm$ )		0.27	6.11	3.83	43.81	3.61	1.12	11.84	4.41

Source: Various issues of Population Index, Population Council, New York

\* Various Issues of Sample Registration System

\*\* Excluding India

low mortality. The average values of e° and infant mortality rate (IMR) for these countries was approximately 67 years and 53 per 1000 live births respectively. Even countries like Japan, Italy, Yugoslavia and the USSR (where e° was the same as the present level of e° in India), never had an IMR as high as that of India. (This level of mortality has been projected for India by 2001 or so). From Table 1 it is also clear that when these countries had maximum NRR, the CBR was as low as 17 and as high as 40; with an average of 25 per 1000 population (SD of 6.12). Currently, India falls between these countries.

Table 2 reveals that there was no decline in the crude death rate (CDR) in almost all the selected countries except a few where it was comparatively high when NRR was maximum. But the IMR declined further from an already low

TABLE 2

Demographic parameters for selected countries when NRR was approximately unity

Name of country	Time period	Time taken to reach NRR=1 (years)	CBR	CDR	IMR	e°	Percent 20-24	Single 45-49
Czechoslovakia	1965-69	15	15.4	8.2	30.5	73.2	35.2	5.3
Denmark	1970-74	25	14.1	9.0	12.0	75.9	51.9	6.5
U.K.	1970-74	10	13.9	11.4	17.4	75.2	40.1	7.6
France	1975	13	13.5	10.0	15.9	76.4	54.8	8.2
Norway	1975	13	13.6	9.0	11.8	77.8	50.3	6.4
Italy	1975	52	14.1	9.1	25.0	75.1	55.7	13.5
Finland	1965-69	19	15.2	8.7	14.8	73.2	55.0	12.3
Bulgaria	1965-69	44	15.4	8.2	30.5	73.2	28.0	2.2
Poland	1970-74	20	16.5	7.5	27.1	74.0	46.7	7.5
Australia	1976	14	16.0	7.2	15.0	75.9	39.9	4.5
Yugoslavia	1977	28	16.8	7.8	35.0	72.1	36.6	6.3
Netherlands	1970-74	25	15.6	7.3	11.7	76.7	44.8	7.9
U.S.A.	1970-74	15	15.4	8.1	18.1	75.2	36.4	4.2
Japan	1955-59	9	17.3	7.2	36.8	68.6	68.4	3.0
U.S.S.R.	1978-79	51	16.7	—	—	74.0	—	—
Canada	1970-74	15	15.7	6.2	16.4	75.8	44.0	7.1
New Zealand	1978	16	15.9	7.1	13.7	75.5	37.4	4.7
Singapore	1976	13	18.4	4.3	18.0	73.9	64.6	3.1
Mean ( $\bar{x}$ )		22.06*	15.46	8.02	20.57	74.54	46.5	6.5
S.D. ( $\pm$ )		13.11*	1.36	1.52	8.17	2.08	10.64	2.93

Source: Various issues of Population Index

\* Average time taken to reach NRR of Unity excluding Italy, Bulgaria, and USSR works out (S.D. + 5.44)

level (from 53 to 21) leading to a substantial increase in  $e^\circ$  (from 67 to 75 years). During the period of NRR transition from maximum to unity, a substantial decline was also observed in CBR. It can be clearly seen that CBR, on an average, came down from 25 (when NRR was maximum) to about 15 when NRR was close to unity (with a SD of 1.31).

Let us examine the long-term demographic goal for India in relation to the experience of the selected countries. It is expected that at the time when NRR of unity for India is achieved the values of CBR, CDR, IMR and  $e^\circ$  would be 21, 8.3, 56 and 65 respectively which are different from those observed in Table 2. These differences are probably due to the fact that the demographic characteristics of these countries were very different from those of India. A higher value of CBR for India is obvious because of the high projected mortality, especially IMR. Once this level falls ( $e^\circ$  is higher) CBR is bound to fall below 21 for India too. Our calculation shows that when  $e^\circ$  increases to 75 as

observed in the case of these countries, CBR would be close to 17 or 18, assuming the present pattern of age specific fertility rates (ASFR) for India. Further, CBR would be about 15 or 16 if the pattern of ASFR changed over a period of time and followed the pattern experienced by the developed countries.

It may be noted that the projected level of IMR for India, which has a direct bearing on the behaviour of couples towards family size, is almost three times higher than that observed for the selected countries when NRR is unity. Actually, this level of IMR was experienced by these countries when NRR was maximum. Most of these countries had an IMR much lower than the level India is expected to achieve by 2006. The level of mortality for India when NRR was maximum (late 1970s) is very high. It seems that unless mortality stabilises at a lower level (high  $e_0$ ) as was the case of the selected developed countries, India may not experience a rapid decline in NRR in the near future.

Table 2 also shows that on an average, these countries took nearly 22 years to reach  $NRR = 1$  from their maximum value of NRR. Of the 18 countries, ten countries took less than 15 years, five took 19 to 28 years and three countries - namely Italy, Bulgaria, and the USSR took more than 40 years. The countries which achieved  $NRR = 1$  in less than 15 years had a maximum NRR value below 1.50 except Canada, New Zealand and Singapore which had a NRR as high as India's. Interestingly, the countries which took approximately 40 years had mortality rates as high as India's and comparatively high fertility rates despite the high age at marriage during the period when they had maximum NRR values. The question arises whether India will follow the path of the European countries or of those which took 40 years to reach NRR of unity.

At this juncture, it may be interesting to mention the pattern of decline in demographic parameters in Japan and Bulgaria during the transition of NRR. Japan was the fastest to achieve  $NRR = 1$  (9 years), during which the CBR declined by 46 per cent (1.66 units per year), IMR declined by 29 per cent (1.68 units per year) and  $e_0$  increased by 19 per cent (1.2 units per year). On the other hand, Bulgaria which had demographic characteristics similar to India, took 44 years to reach  $NRR = 1$  from the level of 1.53 in 1924. In fact for India, the present levels of CBR and IMR when  $NRR = 1.6$  are comparatively lower than those of Bulgaria. In Bulgaria during the 44 years however, CBR declined by 61 per cent (0.55 units per year), IMR declined by 81 per cent (2.87 units per year) and  $e_0$  increased by 37 per cent (0.60 units per year). In the case of India, the CBR is expected to decline by 40% (0.70 units per year), IMR is to decline by 51 per cent (2.90 units per year) and  $e_0$  is to increase by 18 per cent (0.5 units per year). That none of these declines for India are comparable with those of Japan or Bulgaria seems to be extraordinary; and the targets set may be considered to be very ambitious.

### **Factors associated with the Transition of NRR**

#### ***Changes in Marriage Pattern***

It is well known that the marriage pattern in most European countries has always been characterised by late marriages and a high proportion of women

who never marry.<sup>1,2</sup> This peculiar pattern has prevailed for almost a century or two. In fact, these two factors were considered to be responsible for a considerable proportion of the decline in fertility observed during the early period of demographic transition in the West. The existence of such a marriage pattern and changes in this peculiar pattern according to Dixon<sup>3</sup> and Hermillan and Van de Walle<sup>4</sup> are due to the fact that people need a material basis for marriage i.e. they will get married provided proper dwellings and jobs are available. Watkins<sup>5</sup> attributes this pattern to the non-existence of a joint family household in these countries in which case, independent living became a pre-requisite to marriage.

During the period of NRR transition, there seemed to be a slight reversal in this pattern. In other words, the age at marriage and the proportion remaining single throughout the reproductive span in most of these countries declined (Tables 1 and 2). This means that the level of fertility and thereby NRR might have increased due to changes in marriage pattern during the period of NRR transition. Hence, it may be concluded that changes in marriage pattern did not play an important role in NRR transition. Nevertheless, the role of the already achieved high age at marriage resulting in low levels of fertility in these countries cannot be overlooked.

Compared to these countries, female age at marriage in India is quite low (around 18 years in 1981) and is characterised by universality. If there is a rapid change in attitude in society (which may come about through universal education and an increase in educational levels), these two factors together i.e. increase in age at marriage and proportion never marrying throughout the reproductive period may play an important role in the reduction of NRR in India. However, it is beyond the scope of this paper to discuss whether the age at marriage in India would increase to 23 or 24 years within the next 15 years, though it may be mentioned that there has hardly been a one year increase in every 10 years in the past. If the past trend is to continue, it may not reach beyond 20 years.

It has been observed that when the age at marriage increased from 17 to 21 years NRR declined from 1.78 to 1.53 i.e. by 14 per cent only.<sup>6</sup> It may be worthwhile to mention that the effect of an increase in the age at marriage i.e. a decline in the proportion of currently married women at younger ages may be neutralised to a great extent by an increase in the proportion of currently married women at higher ages due to an improvement in mortality conditions and high remarriage rates in future.<sup>7</sup> In other words, this variable may not play a very important role in reducing NRR unless there is an extraordinary change in the marriage pattern and an increase in never married women as observed in the European countries. This does not mean that no effort should be made to encourage marriages at later ages among women, which have a number of other demographic consequences. On the other hand, an increase in permanent celibacy is not desirable and this tendency if it starts, should not be allowed to grow as it may lead to a number of social problems and may threaten the very fabric of our society.

### *Changes in Mortality*

The role of mortality in determining the level of NRR is as important as that of fertility especially for a country where mortality is high, that is the value of  $e_0$  is low. As mentioned earlier, the value of  $e_0$  of the selected countries on an average, was significantly higher than that of India. The main difference however was that in those countries when NRR was maximum, IMR was very low. The low level of IMR probably gave a high sense of security to parents of the higher chances of survival of their children, which caused a decline in the already low fertility rate. Further, when mortality is already low, as was the case in these countries, any further improvement may not cause a significant increase in NRR in the future.

In India, NRR continued to increase till recently mainly due to a rapid decline in mortality. In future, if mortality were to decline at a faster rate, there is a likelihood that NRR may not change or may show a slower decline. This means that to offset the effect of mortality decline on NRR there has to be a rapid increase in the age at marriage and in the prevalence of contraception.

### *Post-partum infecundability*

The dominant factor in post-partum infecundability is the length of breast-feeding (in addition to abstinence). It has generally been observed that in countries or communities where the duration of breast-feeding is long, birth intervals are also long. This practice has been religiously and culturally encouraged and followed in so-called primitive societies for the benefit of the mother as well as children. But pseudo-modernisation is steadily eroding this practice and with this, the extent of its protective effect is also decreasing. Due to the change in breast-feeding patterns and other cultural taboos, natural fertility has been observed to increase.<sup>8</sup> Increase in natural fertility among Canadian Indians was mainly due to a massive and almost abrupt shift from prolonged breast-feeding to bottle-feeding which took place prior to the large scale adoption of birth control practices among Canadian Indians.<sup>9</sup>

Since the last three decades, breast-feeding in the selected countries has been almost negligible (it has been around three months). In societies with a long duration of breast-feeding, say one to two years,  $C_i$  may acquire a value as low as 0.6 i.e. biologically possible fertility may be reduced by 40 per cent due to longer breast-feeding. In modern societies, with a shorter duration of breast-feeding, the value of  $C_i$  is between 0.9 and 1.0.<sup>10</sup> In Italy, breast-feeding had been a common habit until the end of the 19th century in all regions and well into the 20th century in the countryside; the normal duration of breast-feeding was probably between 12 and 18 months.<sup>11</sup> In most Eastern European countries, before the liberalisation of abortion (i.e. 1950) the value of  $C_i$  ranged from 0.9 to 0.5, indicating the widespread practice of breast-feeding in some countries and negligible practice in some others (i.e.  $C_i = 0.9$ ).<sup>10</sup> In the USA, in the second decade of the 20th century, 66 per cent of women breast-fed their children and 40 per cent continued to do so up to the sixth month. But in the 1940s only 25 per cent breast-fed their children and only 5 per cent continued

to do so till the sixth month; the average duration of breast-feeding was around four months. In the more recent period (in the 1970s) however, there seems to be a resurgence in the incidence of breast-feeding.<sup>12</sup> In the case of India, the duration of breast-feeding is observed to be well above 15 months and has changed very little during the last decade.

A review of available literature indicates that by the time NRR had attained the maximum value, the duration of breast-feeding or post-partum infecundability had already reached the lowest level ( $C_i$  between 0.9 to 1.0) in the selected countries. In other words, it may be concluded that post-partum infecundability had no role whatsoever to play in the transition of NRR from a maximum to the minimum in these countries.

If there is a drastic decline in factors which encourage breast-feeding and longer birth intervals with increasing socio-economic development followed by pseudo-modernisation, the achievement of  $NRR = 1$  as envisaged by the Government of India at a level of 62 per cent couple protection may not be possible. It may be noted that with the drastic decline in breast-feeding practices due to attitudinal changes, there may be a faster increase in the prevalence of contraception also. In that case a decline in the duration of breast-feeding may not matter as far as fertility regulation is concerned.

The question then arises as to whether it would be possible to maintain the present pattern of breast-feeding in the light of increasing work participation of women outside the home and other similar factors. It may be unreasonable to believe that we, through the health workers and mass media, can promote or halt the drift away from breast-feeding among the general population when it is being reduced or abandoned by the urban elite group and better educated women. We feel that the extent and pattern of breast-feeding in general, may not change drastically in the near future but the Government should evolve a national policy to encourage this practice especially among the educated urban population and abandon the publicity of bottle-feeding. The WHO has come out openly against bottle-feeding. In addition there should be educational programmes to teach the general population about proper substitution of solid foods in the infant's diet at the right time. The recent Infant Milk Foods and Feeding Bottles Bill passed by the Rajya Sabha indicates the realisation of the importance of breast-feeding on the part of the Government.

### *Induced Abortion*

The liberalisation of abortion or the imposition of strict legislation may have striking demographic consequences. Almost all the countries in the world, be they developed or developing, have experienced or are experiencing illegal abortions. It is generally observed that when and where abortion legislation is restrictive, illegal abortions are often performed under conditions that result in serious health impairment to women. For India, the number of illegal abortions was estimated to be 4 million around 1966 (Ministry of Health and Family Planning, 1966) and about 25 per cent of the total pregnancies were terminated by abortion often through unhygienic and dangerous methods.

Another study provides an estimate of 6.4 million illegal abortions in 1970 (i.e. 20 per 100 known pregnancies) though the officially reported figure is 1.7 per 100 known pregnancies. In order to prevent the harmful consequences of illegal abortion, policies have been evolved to regulate abortion under a given set of condition. In general, socialist countries have more liberal laws and a much higher incidence of abortion as compared to other countries, either due to their political ideology or socio-economic development.

In the late 19th and early 20th century, abortion played a major role in the demographic transition in these countries probably due to a lack of effective contraceptive methods at that time. There is hardly any country which had undergone a demographic transition from high to low fertility without significant recourse to induced abortion.<sup>13, 14</sup> Japan which completed its transition from a high NRR to  $NRR = 1$  in approximately nine years, experienced the highest abortion rate during the transition period (29.3 per 100 known pregnancies in 1950-54 to 66.3 per 100 pregnancies in 1960). Romania is the only country which had a slightly higher abortion rate than Japan during the same period. For later periods however, it experienced lower rates than Japan. In Finland, the abortion rate quadrupled between 1968-73 but declined later as had happened in almost all European countries. In North-west Europe, the abortion rate increased from 38 per 100 live births in 1908 to 113 per 100 live births in 1932. In general, the abortion rate was observed to be much higher in Eastern European countries (such as Bulgaria, Czechoslovakia, Hungary, Poland, Yugoslavia) as compared to Western Europe and the USA (Ca varied from 0.6 to 0.8 in Eastern Europe and from 0.8 to 0.9 in Western Europe and USA. However, even in these countries the effect of abortion on fertility was obviously much lower than that of contraception ( $Cc: 0.3$  to  $0.4$ ). Nevertheless, it is felt that in these countries, abortion legislation facilitated and possibly expedited the ongoing fertility decline, and even today it helps to sustain lower fertility levels.

As seen from Table 3, the abortion rate in these countries did not increase significantly during the transition of NRR, and, in fact, declined in some of them. This means that its role in the decline of NRR may not be substantial, but it does help to maintain low fertility levels and acts as a back-up for contraceptive failure. The relevant issues in this context are: why did these countries experience such a high abortion rate? Having high educational levels, they could have resorted to family planning. Why does the abortion rate show a decline? Was it due to the use of effective contraception or its ill-effect on health and to more restrictive laws in the recent past?

No doubt, there was a tremendous change in the reproductive behaviour of the women in these countries due to their overall socio-economic development, the high costs of bearing and rearing children, and individual aspirations, but they still relied on traditional methods of fertility control like withdrawal. In Japan, the high rate of abortion probably reflects the restricted availability of modern contraceptive methods especially the pill and surgical contraception.<sup>15</sup> Therefore, given the very high use of primitive methods of contracep-



TABLE 3

Total abortion rate at two points of time for selected countries

Country	Total Abortion Rate and Time (Period)			
Czechoslovakia	0.684	(1958-64)	0.993	(1970)
Denmark	0.153	(1950-54)	0.387	(1972)
U.K.	0.048	(1961)	0.345	(1972)
France	—		0.369	(1976)
Norway	0.219	(1968)	0.600	(1974)
Italy	—		—	
Finland	0.171	(1956-60)	0.414	(1970)
Bulgaria	0.870	(1960)	1.896	(1970)
Poland	0.729	(1965)	0.555	(1974)
Australia	—		—	
Yugoslavia	1.431	(1966-71)	1.755	(1975)
Netherlands	—		0.219	(1973)
U.S.A.	0.0078	(Before 1970)	0.609	(1975)
Japan	1.221	(1950-54)	0.789	(1973)
U.S.S.R.	5.100	(1960)	5.400	(1970)
Canada	—		0.075	(1970)
New Zealand	—		0.213	(1976)
Singapore	0.123	(1970)	0.849	(1973)

Source: Calculated from Tietze C. "Induced Abortion. A World Review," A Population Council Fact Book, 5th Edition (1983)

tion in most of these countries, abortion played a very crucial role in reducing fertility levels. Due to a change in the type of contraceptives used (i.e. more modern and effective methods which were not easily available in the past when fertility began to decline) and also restrictive laws and their implementation, the abortion rate showed signs of decline; probably for the better.

In India, it is argued that the incidence of illegal abortion is very high and has been increasing over the years. As mentioned earlier, the illegal abortion rate in 1970 was 20 per 100 known pregnancies, which is substantially higher than that in Canada, Denmark, the United Kingdom, Finland, the Netherlands, and Singapore at that time. However, official figures show a rate of only 1 per 100 known pregnancies in 1973 which has increased to 1.8 in 1981. The reliability of official figures is well known and hence the trend in the abortion rate based on official statistics may not be real. This may only indicate the fact that the reporting of abortions is improving. We hope the Government of India will not liberalise abortion laws further and will not think of encouraging abortion as a means of achieving its demographic goal, since abortion may not be an important factor in the demographic transition in India as was the case in the above countries.

### Prevalence of Contraception

At the later stage of demographic transition, contraception plays a vital

role in fertility decline. During the course of fertility reduction, the prevalence of contraception makes the highest contribution. In fact it is assumed, probably rightly, that family planning programmes are the most ethically preferable among fertility reduction policies. Nevertheless, in these countries, fertility had already begun to decline and probably was at a comparatively low level before the practice of contraception became satisfactorily high. But in most of the developing countries it was/is family planning programmes which gained more attention as a means of fertility control.

Since data on the use of contraception in the past for these countries was not available, it is hoped that a short discussion based on available information would be indicative of the situation prevailing in these countries. Some user statistics from a UN publication are given in Table 4. The statistics at two points of time in these tables are not strictly comparable. In most of these countries, above 60 to 80 per cent of married women of reproductive age were current users of contraceptives except in Japan where this figure was 56 per cent in 1965 and 58 per cent in 1981. This means that in Japan, during the transition of NRR from a maximum to a minimum, the prevalence of family planning methods was below 60 per cent, and secondly, that there was no substantial increase in users. In the USA, the percentage of users increased from 61 in 1951 to 70 in 1973. More than the increase, there was a qualitative difference in the users in almost all the countries. In 1970, around 52 per cent of the couples at risk were using highly effective modern contraceptives (pills, IUD and sterilisation), an increase from 33 per cent in 1965 and 10 per cent in 1960. It was observed that the majority of Roman Catholic women shifted from traditional methods to more effective modern ones, ignoring the teaching of the church on the subject of birth control.<sup>17</sup> During the 1960s (i.e. the transition period), the decline in births within marriage could be attributed to the availability of improved methods of fertility control. Table 4 also indicates that despite a high percentage of users in the 1970s, there was a substantial increase in users by the late 1970s. In Singapore (which took about 13 years to achieve  $NRR = 1$  from  $NRR = 2.29$ ), the percentage of users increased from 45 in 1970 to 71 in 1978.

It is surprising to note that in these countries traditional methods were/are still very common (Table 4). In countries like Italy, Yugoslavia, Bulgaria, Czechoslovakia and Poland, traditional methods such as rhythm and withdrawal, accounted for more than 50 per cent of the total users. Even in the recent period, clinical and resupply methods accounted for only about 10 per cent in Bulgaria; in Belgium and France their usage was around 40 per cent. However, during the 1970s, the share of clinical and resupply methods increased substantially: in France (from 32 to 62 per cent), Finland (from 70 to 97 per cent), the Netherlands (from 71 to 93 per cent). In Finland, the shift was primarily towards a greater use of the IUD, in Japan about 80 per cent of current contraceptive users employed the condom, in the U.K., Norway and Singapore the use of condoms was between 20-30 per cent, whereas in Denmark and Finland it was about 40 per cent. It may be interesting to note that these are countries in which the abortion rate was very high indicating a high incidence of unwanted pregnancies.

TABLE 4

## Popular family planning methods in selected countries

Country	Year	Percent users of family planning	Popular Method (Percent of total acceptors)
Czechoslovakia	1970	66	Withdrawal (52), Condom (19), IUD (14)
	1977	95	Withdrawal(31), IUD (19), Pill (15), Condom (14).
Denmark	1970	67	Pill (37), Condom (30), Withdrawal (7)
	1975	63	Pill (35), Condom (39), IUD (14)
U K.	1967	69	Condom (41), Withdrawal (25), Pill (19)
	1976	77	Pill (36), Condom (23), Sterilisation (21)
France	1972	63	Withdrawal (52), Pill (17), Rhythm (14)
			Condom(12)
	1978	79	Pill (34), Withdrawal (29), IUD (13)
Norway	1978	71	IUD (39), Condom (23), Pill (18)
Italy	1979	78	Withdrawal (46), Pill (18), Condom (17)
Finland	1971	77	Condom (40), Pill (26), Withdrawal (21)
	1977	80	Condom (40), IUD (36), Pill (14)
Bulgaria	1976	76	Withdrawal (79), Pill and Condom (3)
Poland	1972	57	Withdrawal (38), Rhythm (33), Condom (17)
	1977	75	Rhythm (41), Withdrawal (25), Condom (19)
Australia	—	—	—
Yugoslavia	1970	59	Withdrawal (70), Pill (9), Condom (6)
	1976	55	Withdrawal (65), Pill (9), Rhythm (8)
Netherland	1969	59	Pill (45), Condom (23), Rhythm (19)
	1975	75	Pill (66), Condom (14), Sterilisation (6)
U.S.A.	1965	61	Pill (24), Condom (22), Rhythm (11), Sterilisation (12)
	1982	70	Sterilisation (35), Pill (30), Condom(13), IUD(7)
Japan	1971	56 (1956)	Condom (73), Rhythm (33)
	1979	58	Condom (81), Rhythm (23)
Singapore	1973	45	Pill (36), Condom (28), Sterilisation (12)
	1977	71	Sterilisation (30), Condom (29), Pill (24)

Source: U.N 1984 16

Does the popularity of sterilisation in the recent past provide evidence that many couples find reversible methods to be unsatisfactory? Besides sterilisation, there has also been a substantial increase in the use of more effective modern reversible contraceptives (pills, IUD etc.). Whatever the reasons for these changes, they seem to be the most important factor during the transition of NRR from maximum to unity. Nevertheless, factors like age at marriage, IMR etc. which are responsible for the already low levels of fertility and mortality cannot be over-looked.

The prevalence of contraception in India has been increasing steadily. In 1970, according to an all India survey conducted by ORG,<sup>18</sup> approximately 14

per cent of married women in the age group 15-49 were reported to be using contraception, including traditional methods. This figure was only 10 per cent if users of traditional methods were excluded. Family planning users constituted 27 per cent (22 per cent excluding traditional methods) of married women aged 15-49 in Kerala, the highest among Indian states. A 1980 survey<sup>19</sup> observed that during 1970-80 the percentage of users increased to 35 (28 per cent excluding traditional methods), showing an increase of 1.1 units every year. In Kerala, it increased to 61 (57 per cent excluding traditional methods) which is as high as that in some of the selected countries and indicates an increase of 3.4 units every year. Can India follow the path which Kerala has experienced during the last ten years? Probably not. But the prevalence of contraception would be around 57 per cent including traditional methods for India by the end of the century, if the same rate of increase continues and traditional methods do not disappear.

### **Concluding Remarks**

Any country which aims at achieving a stationary population has to realise the goal of  $NRR = 1$ . The Government of India has framed its population policy to achieve this target by 2006 A.D. The above analysis indicates that in most of the developed countries, the NRR was maximum when fertility and mortality, especially infant mortality, were comparatively low ( $CBR = 25$ ,  $e_0 = 67$  years and  $IMR = 53$ ). The Government of India plans to attain a NRR of unity at approximately similar levels of fertility and mortality. Further, when most of the developed countries achieved  $NRR = 1$ , both fertility and mortality were lowest ( $CBR = 15$ ,  $e_0 = 75$  years and  $IMR = 21$ ). Therefore, the demographic characteristics for India when  $NRR = 1$ , may be different from those observed in the developed countries. Beyond 2006 A.D. however, fertility may decline to a level observed in the developed countries whenever there is further improvement in health conditions (increase in  $e_0$ ).

Family planning programmes have played a significant role in the transition of NRR. Although the late age at marriage and proportions never marrying led to low levels of fertility during the transition period, their role was towards increasing NRR. The analysis also indicates that abortion might not have played a significant role since the abortion rate did not increase during the transition period.

In the case of India, an increase in female age at marriage may induce a reduction in NRR but its impact may completely be offset by declining mortality. It seems therefore, that like the developed countries the family planning programme may be the only important factor for the reduction of NRR in India. In future, if the duration and extent of breast-feeding were to reduce, the contraceptive prevalence rate would have to be much higher than that stipulated by the Government. In order to achieve a NRR of unity therefore, in addition to extraordinary efforts to increase the outreach of family planning (especially temporary methods), the Government of India should also take effective steps to increase the female age at marriage especially in those States where it is quite low.

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# **POPULATION EDUCATION AS AN INNOVATION: ITS NATURE, SCOPE, APPROACHES, OBJECTIVES AND PRESENT STATUS**

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## **Introduction**

It is only a little over three and a half decades since economic planners, world leaders, statesmen, administrators and others began to realise, then to debate and finally to concede that the world faced a problem unheard of and unknown to mankind in all the thousands of years of man's existence on earth—the problem of human population outstripping the earth's resources.

The end of World War II in 1945, saw the decline of colonialism and the emergence of independent countries in the continents of Asia and Africa. The United Nations (UN) was formed to provide security and co-operation among nations. A Secretariat was established and a number of international agencies were set up for the purpose of promoting development. Among several others may be mentioned the IDB, UNESCO, WHO, UNICEF etc.

The immediate task of the post-war world was to aid and re-build the economics of the war-shattered countries. For the countries of Asia, which had recently won political freedom, the urgent task was to establish the infrastructure for socio-economic development.

## **The Population Phenomenon and Developmental Planning**

In the countries of the west, the growth of population at an astonishing rate during the 19th century had been a cause of concern in the earlier part of the twentieth century. By mid-century while the population of the developed world achieved a stable growth pattern brought about by several inter-related factors including women's education and participation in development, the population growth patterns of newly developing countries became a matter of investigation and then one of serious concern. By the sixties world population had registered a phenomenal increase from about 1,656 million in 1900 to 3,027 million in 1960.

Man's interest in his own numbers has been a feature of early times. Early population counts were maintained largely for the purpose of taxation and conscription of manpower for the army. Demography as a tool of economic planning is however a modern concept. The need for world-wide compilation of population data was initiated after the establishment of the United Nations, as population information was an essential factor for international developmental planning.

As the countries of Asia and Africa attained independence and became member-states of the United Nations, a world-wide system for the collection

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of population data was initiated. It was only after 1955 that world-wide monitoring of population characteristics served to provide a continuous flow of information. Planners, environmentalists, futurologists and others began to assess future trends of population growth and its implications for man and his future.

### **Indian Independence and Planned Development**

Against this background of a world weary of war, India attained its independence in 1947. In 1950, its people gave to themselves the Constitution of India which proclaimed the country to be a Sovereign Democratic Republic.

The task before the Government was formidable. In 1947, the unprecedented influx of human population brought about by the partition of British India into two States—Pakistan and India—necessitated immediate measures for the relief of the refugees pouring into the country. Equally urgent was the task of raising the living standards and fulfilling the aspirations of the people for a better quality of life. A poor country of continental size in terms of distances, religious plurality, regional disparities and linguistic differences was attempting to build itself into a modern nation. Of its 361 million people, 82.38% lived in rural areas, literacy was 16.67 per cent, infant mortality 132 per 1000 live births, and life expectancy 32.1 years.

Bearing in mind these realities, the task of transforming an agrarian society with a five thousand year old traditional culture, into a modern, self-reliant industrial nation, in the shortest period of time, was a challenge. By virtue of its own traditional ethos and as member of the United Nations, India was committed to the doctrine of human rights and social justice.

Committed to the concept of a welfare state, the removal of poverty was one of the major planks of India's economic policy. Through successive Five Year Plans commencing in 1951-52, the country sought to increase productivity in agriculture, establish a strong industrial base, extend mining operations, speed up manufacture of a wide variety of goods and accelerate employment. Better transport and communication facilities, safe and rapid movement of goods and people, a vast and increasingly sophisticated network of road, rail, air and sea lanes for trade and travel, had also to be established.

Equally important for a largely illiterate population were the welfare services initiated at the time of the first Five Year Plan. "The success of planning in a democracy depends on the growth and co-operation of a disciplined citizenship and the degree to which it is possible to evoke public enthusiasm and the building up of local leadership".

To eradicate illiteracy, universalisation of primary education was to be achieved by 1960. The expansion of school places for all children at age six became part of planned development. At the higher education level, the number of universities was increased and prestigious institutes for scientific research, technology and engineering were established, in line with international standards.

The health services for which a nation-wide infrastructure had been established during the period of British rule, were extended to reach every section of the populace. The propagation and promotion of preventive health

measures, improved water supply, sanitation and immunisation were stepped up so as to reach in course of time, every district and village in the country.

A unique feature of health planning during the First Plan period was the incorporation of family planning services into the overall health infrastructure. The intervention of a far-sighted group of volunteers consisting of eminent doctors and social workers of the Family Planning Association of India—a voluntary agency formed in Bombay in 1949—brought to the notice of the country's Prime Minister, the importance of family planning as a catalyst to developmental planning. To ensure that services for family planning would be made available to couples who wished to plan their families, clinics were established.

Opposition to family planning by conservative members of the Planning Commission was over-ruled by the views of economists who perceived population planning to be intrinsic to modern economic planning. Thus India became the first country to launch a National Family Planning Programme.

### **Genesis of Population Education in India**

As population growth in the less developed countries began to accelerate with little or no fall in fertility, Population Education programmes were initiated in many countries of Asia and the Pacific in the late sixties and early seventies. Among the developing countries India had recognised the importance of a small family size for the success of its developmental planning.

The first country in the world to opt for a national family planning programme (1951-52) the concern of the government at the time had been to achieve reduction of crude birth and death rates. Upto the mid-sixties, surveys and experiments with the rhythm method and the slogan —Do ya teen bus—, constituted the main set of activities; along with provision of clinical and medical services for clients.

The Census returns of 1961 and the mid-year figures for the inter-plan period indicated a phenomenal increase. The population had risen from 5 million per annum in 1951 to 13 million per annum in just ten to fourteen years.

Demographers, economists, policy makers, family planning experts and a few others began to express serious concern as they perceived the implications of a population that would at this rate double in approximately 30 years while the country was struggling to raise the low living standards of its people. Urgent action was called for, but there was little response from political groups or the general public. The complexities of the population phenomenon were not clearly understood. The factor that time is needed to achieve the goals of planned development and that family planning in this context, was a measure to promote developmental efforts was not perceived. Social attitudes even among the educated were steeped in traditional beliefs, which irrationally viewed family planning as being contrary to one's faith.

At this time the country's population had brought about a situation where 40% of the population was under the age of 15. The implications for future growth and its effect on the standard of living would be serious.

Government response to the problem was to adopt a two-pronged strategy



under its revised population policy. On one hand a complete re-vamping of the national family planning programme was undertaken as an immediate measure. Mother and child health care (MCH) became the pivot of the programme. Concrete health inputs were provided for the pregnant mother (before and after the birth of the baby). IEC services for education and motivation of couples and community groups backed up by medical and clinical services, were brought to the door-step of the client by means of family planning camps and mobile units.

On the other hand a long-term strategy was adopted. Population awareness for the younger generations was considered an urgent need if family planning was to become a way of life for the country in the future.

The new area of population and its growth was at that time uncharted territory. The earliest suggestions for teaching demographic information in schools had been made by two American demographers in 1943 followed by more serious comment in the sixties. In 1962, Prof. Philip Hauser<sup>1</sup> said, "It is about time for school curricula to incorporate twentieth century demographic findings, in the context of their twentieth century implications".

Prof. Sloan Wayland<sup>2</sup> who subsequently contributed to the formulation of the national programme in India, referring to this period said, "My interest in Population Education started with my first visit to India in 1965. In fact, 1965 marked the beginning of interest, of a world-wide movement in Population Education."

In 1965, a world meeting was organised by the International Planned Parenthood Federation following which, several countries initiated discussions on the need for Population Education for young people in school and college.

In 1968, the Ministry of Education invited Prof. Sloan Wayland to discuss the modalities of starting a National Population Education programme. Prof. Wayland also had discussions with the FPAI.

Speaking at the Association's Sixth All India Conference on Family Planning in 1968, the President Smt. Avabai B. Wadia pointed out that the red triangle and the publicity for family planning had begun to catch the attention of young children. It would therefore be desirable to give them some background knowledge about the subject of population in an educational way. Referring to the large number of children below the age of 15 years who then constituted 40% of India's population, she added, "What they learn and understand is of the utmost importance for the future of the nation. These young people will soon become adults and enter into marriage and parenthood". She emphasised that the children in school were not to learn about family planning. "Creating an awareness about the population is a challenge that educators and schools and colleges have to take up as soon as possible."

The National Seminar on Population Education at Bombay jointly organised by the Ministries of Health & Family Planning and the Ministry of Education marks the beginning of the national programme of Population Education in India. In May 1970, a Population Education Cell was established in the National Council of Educational Research and Training (NCERT), New Delhi,

and a blue-print for the programme drawn up, as recommended at the Conference.

### **Population Education—as an Innovation**

As the newly developing countries in Asia, Latin America, Africa and other parts of the world began a rapid growth of population for reasons similar to those of India, programmes for family planning and population education were introduced in several of these countries.

To establish an acceptable framework for the newly developing discipline, representatives of governmental and non-governmental agencies, as well as international experts, met at the South-East Asian Regional Workshop under the auspices of UNESCO at Bangkok in 1970.

Varying definitions of Population Education were explained and debated. To accommodate views of countries which had incorporated Population Education directly into developmental planning through education and countries which had evolved the programme under their population policies; an open-ended definition was formulated to accommodate both view-points, "Population Education is an educational programme which provides for a study of the population situation in the family, the community, nation and the world, with the purpose of developing in the students, rational and responsible attitudes and behaviour, in regard to that situation".<sup>3</sup>

As noted earlier, the need for Population Education came from a recognition on the part of the government (Ministry of Health & Family Welfare) that a population problem had emerged; the problem of a rapidly growing young age population (40% under age 15) which would in turn, contribute to very rapid population growth in the future. Its task was to generate widespread awareness of the problem among this age-group as quickly as possible, by utilising existing school structures.

No one definition could be considered the ultimate one, as the entire programme was still in a state of evolution. Precedents in terms of implementation did not exist. Definitions so essential to programme formulation had been presented by national and international experts during the seminars and conferences held by governments and voluntary agencies between 1969 and 1971. Some definitions highlighted goals, others content, structures, resources, processes and specific outcome desired. But all agreed on the educational nature of the programme and the clientele as being distinct from that of the family planning programme.

Faneuff<sup>4</sup> proclaimed, "Population Education supplements existing medical endeavour regarding population policies by means of innovation in education". Speaking at the National Conference on Population Education in Delhi in 1971, Prof. Wayland drew attention to the several difficulties that would need attention if successful promotion of Population Education was to be achieved. The importance of attitudes was pointed out, for without conviction, teachers could not be expected to generate positive attitudes among their students, so as to bring about change in attitudes related to sensitive areas of family living and

family size. Open-mindedness was equally essential for administrators, principals, and all those in authority. As stated by Wayland, "In the final analysis, this initiative will have to rest with the educators, whose legitimate responsibility is to bring about innovation in education".

The educational system as a whole, resting heavily on acquisition of knowledge and performance in exams, rather than on analysis and thinking, was not geared to such a task. Thus the conjoining of "Population" and "Education" was narrowly interpreted as the study of demographic facts and figures which would be integrated, infused or taught as a separate course in the schools. The "innovative factor" became the incorporation of information considered appropriate viz. Population Studies, because of focus on the term 'Population'.

Undoubtedly, Population Education goals are intended to operationalise population policy, but the transfer of the programme from the Health Ministry to the Ministry of Education did not result in specificity of goal-setting in educational terms. Direct exhortations to adopt "a small family norm" was the message of Population Education programmes. This pre-determined message was very similar to the highly publicised family planning slogan: "A small family is a happy family". A message can only be a one-sided directive. Education however is a process not merely a product.

At that time, educational systems were not geared to this view. Consequently, programme officers and implementors have tended to consider Family Planning and Population Education as one and the same programme, even though directed to different target groups. The factors and the lack of leadership from universities and educational institutions in reforming an obsolete system of education; reflects the difficulties inherent in a programme, the outcome of which is to bring about change in attitudes, rather than to ensure acquisition of knowledge for the sake of broadening the mind.

Burleson<sup>5</sup> had expressed the hope that through Population Education, "the school could become an instrumentality in alleviating the heavy burden upon educational resources and facilities resulting from rapid population growth". Unlike the advanced countries where efficiency and efficacy of educational systems was the priority factor, academic institutions in the country concentrated on expansion of structures and curricular change. Systems of education that train learners to face the challenge of rapid change, had yet to evolve.

### **Innovation in Education**

In America, scientific research, the knowledge explosion, and new technologies, gave an impetus to earlier efforts by educationists and psychologists to make educational systems more relevant to man and his condition. Industry and developmental planning forged links with universities where research took place and new knowledge evolved. Out of these forces came several innovations in education, leading in time to a complete transformation of educational systems in the advanced countries.

"Innovation" in education has several meanings. It may be a new inven-

tion, a new discovery or a new way of looking at existing situations. Its test is effectiveness and efficacy. It means new 'insight': a deeper understanding brought about by scientific processes of learning and thinking, which themselves are innovative. The most important change or innovation lies in the concept of education as a continuing life-long process. This view questions the conventional belief that 'one-time acquisition of knowledge' gained in school or college alone, is education. Research substantiates the view that man learns from the totality of his life situation and experiences. In a scientific, techno-industrial world, education cannot remain the privilege of a small section of society. To bring millions of citizens into the mainstream of life, education must be relevant, flexible and cost-effective, in terms of time and money.

From these changes came innovative systems of education collectively subsumed under the term 'Non-formal Education'. Goal-oriented planning of educational programmes became the corner-stone for attainment of specifically defined educational outcomes.

When Population Education programmes were first started, educational systems in developing countries were not ready as yet for transformations of this type. Global recognition of non-formal approaches and educational experiments by different countries, are matters of recent development. Thus within the constraints of the existing educational system, the concept of Population Education became a narrow one. It focussed on a study of demographic information and related it to "quality of life" issues. By focussing on the 'cognitive aspect' with overemphasis on statistical data and growing members, it failed in the affect dimension of education viz. attitudinal change. Thus it could not serve as a catalyst for educational change as visualised by Wadia,<sup>6</sup> Viederman,<sup>7</sup> Burleson,<sup>5</sup> and others.

### **Population Policies and Population Education**

Meanwhile, the population problem world-wide has become more complex than it was twenty years ago. World population in the mid-sixties had already reached three thousand three hundred million having been just 2.6 million in 1950.

In recognition of world-wide seriousness of the situation a World Population Conference was held at Bucharest in 1974. A World Population Plan of Action was adopted, having due regard to human aspirations for a better quality of life and taking into consideration the inter-relationships between a country's population situation and socio-economic development:

"It is impossible to think of solutions to the major problems confronting the world-economic development, pollution of the environment, improvement in the quality of life, even disarmament—without some reference to population trends. The evidence is all around us. In the developing countries with two-thirds of the world population and some of the highest rates of population growth, there are insufficient schools, text books and teachers for children reaching school age; not enough vocational training places, shortage of jobs for the untrained and unschooled young adults".

**"The industrialised nations have not been immune to demographic pressures. Swollen cities, the drain of talent from regions of low development to centres of affluence, heavy internal migration, have all left their mark".**

**"Population, development and environment make up an important element in the construction of a new economic and social order which along with the maintenance of peace, constitutes the principle challenge of our generation. Each nation, each community, each family must assess in detail, how these trends affect their hopes for higher living standards, better education, health and happiness".**

**The Plan further states, "All couples have the basic human right to decide freely and responsibly on the number and spacing of their children and to have the information, education and means to do so; the responsibility of couples and individuals in the exercise of this right, takes into account the needs of their living and future children and their responsibilities towards the community".**

**Following this Conference, a number of countries framed national population policies in keeping with their own country situation; the common goal arising from the human aspirations for attainment of a better quality of life.**

**India took a major step in formulating its National Population Policy in 1976. Among its achievements was the recognition on the part of all sections, that the population problem posed a threat to mankind itself and that developmental, legislative and other measures be taken to bring down the birth rate. The age at marriage was raised from 16 to 18 for girls and from 18 to 21 for boys. The minimum needs programme into which family planning was incorporated, was to bring about improvements in the living conditions of the people. A greater thrust was to be given to Population Education.**

**By 1981, world population at 4,842,048,000 was nearing the five billion mark. Fifty-five per cent of the world population was located in Asia and Oceania (not including Russia).**

**"The total population of 38 countries in Asia (excluding USSR) and Oceania was estimated at 2.4 billion or 55 per cent of the world population in mid 1979.... The rate of population growth in this region is 1.8 per cent which means an addition of about 43 million people annually. This large number would not be a reason for concern if food supply, energy and other resources were growing at a rate commensurate to the growth of the population. But such is generally not the case".**

## **Nature and Scope**

### ***The Population Problem in India***

**Though India, the second most populous country in the world, took the earliest steps to bring down crude birth and death rates; its annual growth rate (2.5 per cent) like that of many developing countries remains high, although nation-wide family planning services have helped to avert 70 million births since**

**\* UNESCO, Population Education in Non-Formal Education and Developmental Programmes.**

the inception of the programme in 1951-52.

The country's land area is just 2.4 per cent of the world land area, while its population today ranks at 14.8 per cent in relation to world population. In just 30 years the population has doubled from 351 million to 684 million in 1981. Population density has increased from 117 million to 216, as each year 13 million (and now 15 million) net population is added to the country's ever-growing numbers.

In the same period, literacy has barely increased from 16.7 per cent to 36 per cent; yet in absolute terms, illiterates have increased from 300 million in 1951 to 445 million in 1981. While the infrastructure for primary, middle and secondary schools has been increased under each five year plan, the removal of illiteracy remains a distant goal. Only 62.4 per cent of 6 year-old children could enrol in school in 1961. By class V (age around 11) 39.9 per cent of them dropped out of school. Today the infrastructure facilitates over 95 per cent of six-year olds to enrol in class I but by age 11, more than 50 per cent of them drop-out. It is significant to note that most of the drop-outs are girls!

The total number of persons in the labour force (15-59 years) has increased from 187 million in 1951 to 358 million in 1981. Total unemployment is estimated to be around 20 million at present. In India, the large 'dependent population' (42 per cent between 0-14 years and 6 per cent above age 60) constitutes roughly half the population of the country, the 'productive population' being 52 per cent (15-59 years of age).

A high dependency ratio leads to several complex outcomes. From the gains of national productivity each year, larger sums have to be diverted for the provision of basic needs and for essential and welfare services, at a time when larger savings and investments are needed to step up economic growth and to increase employment for the growing population. Further, both rapid population growth and the developmental needs of the economy, exert pressure on the land. Depletion of forest cover to provide food, fuel, fodder and for industrial use, threatens to upset the delicate ecological balance between plant, human and animal life.

Another dimension of population pressure is the fragmentation of land holdings. This reduces productivity of the land and partly contributes to large-scale migration of rural population to the cities. Newer problems of bloated cities and urban decay have thus emerged, creating pressures on health, housing, educational, medical and other services and thereby affecting adversely, the quality of life of the population.

A country's future is intrinsically linked with the quality of its child population. In India the total child population under age 14, is 225 million. Ninety-nine million or 55 per cent of the child population lives in the rural areas. Of the total child population, 118 million are in the 0-6 pre-school stage. In spite of a wide range of child welfare services for this vulnerable age group (initiated since the third Five Year Plan) these services have not taken root in communities, where women's educational status is low. While infant mortality rates have declined from 146 per thousand in 1951 to 114 in 1981, they compare unfavourably with some of the other developing countries which have lower Gross

National Product e.g. Sri Lanka.

Ninety per cent of infant mortality in India is due to malnutrition, unsafe drinking water and inadequate sanitation. In this connection FAO indicators that provide, "a picture of poverty in its major manifestations" are of relevance to the Indian situation: One of the most serious problems of our times is the incidence of rural poverty.... It is estimated that 700 million people (world-wide) are presently living in absolute poverty. Their basic needs—food, shelter, health—can scarcely be met at the minimum level required for survival.... Among indicators for measuring rural poverty are: the extent of undernourishment, life expectancy and illiteracy dominates numerically.

The relationship between illiteracy and incidence of malnutrition (and therefore of higher infant mortality rates) may be assessed by comparing the effect of women's literacy—e.g. 65 per cent in Kerala, on child health and education, with the conditions that prevail in the low-literacy states of Bihar (13.58), Uttar Pradesh (14.42), Madhya Pradesh (15.54) and Rajasthan (11.32).

Malnutrition or undernourishment in the first five years of life has serious implications for the child's physical, mental, emotional, and social growth. It is in this sense that, "Children are the principal victims of improvident reproduction".

What will be the long-term implications on the country's demographic profile and therefore on quality of life, as also on quality of national man-power, when today's young-age population enter the reproductive age group? Their future productivity and contribution to the national economy will depend largely on their health, educational status and the skills which they bring to their task.

For this to happen, the quality of developmental and welfare services available, as well as the use and acceptance of the services by "today's parents" (15-44 years) will determine the outlook of "tomorrow's parents" (14 years) in regard to population issues of immediate concern viz. age at marriage, fertility behaviour, attitudes towards the child and parent responsibility is a changing society.

Psychologically humans succeed in overcoming socio-cultural and other barriers when medical intervention is needed to ward off death. Attitudes in regard to warding off births by means of clinical/medical intervention have not generated a parallel response. Partly this is due to the fact that population problems go unnoticed for years, since the key determinants of population change i.e. births and deaths are occurrences that take place within the family unit. Further, family dynamics themselves are influenced by several factors—human biology, human psychology, health, education, economic, socio-cultural and other forces.

It is only when the long-term effects of declining mortality with little or no decline in fertility, become visible, that the public may perceive a population problem. Even when noted; due to lack of civic responsibility in urban areas and a vast illiterate population, the public may not be aware of its own role in possibly contributing to the problem. It cannot therefore work towards solutions that could collectively lead to improvement in quality of life in the

family and thereby aid the national effort towards population stabilisation as an intrinsic part of total developmental strategy.

A direct and logical measure for a population whose children will have to suffer the consequences of today's thoughtless reproduction is to promote widespread acceptance of family planning. The gap between awareness and practice however is very large, as evidenced by the general resistance to the family planning programme over the past 35 years. It is this vast gap in the perceptions of people at all levels that Population Education must bridge!

The long-term goals of Population Education have been set, viz. to operationalise the country's population policy. In demographic terms this means working towards the attainment of a stipulated, numerical decline in birth rate, death rate, infant mortality rate etc. as the means to achieving population stabilisation.

Translated into human terms it would mean, that for population to stabilise by 2050 A.D., millions of young people who enter the reproductive age group each year—today and in the next two decades—should have developed such understandings and value re-orientation as would generate in them, feelings of personal concern, regarding the impact of the population situation on their own and their children's future. When the "distant problem" is perceived as one's own problem, human beings spontaneously seek solutions. Family planning practice would be one such solution; hence a demand for family planning services would follow.

How then can we conceptualise Population Education for this type of outcome?

Feedback reveals that one of the major barriers in the evolution of Population Education programmes has been a lack of clarity in regard to the nature and scope of Population Education.

"If we accept the validity of introducing Population Education, we are then faced with the problem of bringing about change in the educational system" (i.e. if we concede its usefulness for the purpose for which it has been introduced, then changes in the educational system will be a necessary condition for successful outcomes)

With the education system 'subject-dominated' rather than learner-centred; the demographic data and the prescribed outcome of the small family norm, tend by association, to be interpreted as family planning education. Psychological barriers to family planning (themselves irrational) have influenced the perceptions of adults and hence of learners. While there is an intrinsic link between Population Education and Family Planning as stated earlier, the two are not identical.

"Population education is different in character and content from family planning education... It is essentially a part of knowledge about the contemporary world and some of the fundamental factors which influence and shape a nation and its advancement, not only in economic terms but also as regards the development of human resources"

As part of the developmental strategy, Population Education cannot limit itself to the narrow goals of the population policy but must incorporate basic



developmental insights. "Population, Development and Environment are the three main aspects of man's adjustment to the biosphere and the fulfillment of his own being".

The programme itself must be conducted in consonance with the goals of education. In human terms, education as well as development should contribute to, "not just a developed mind but one who contributes consciously to social change by taking on responsibility for his own betterment".

Population Education is thus a broad-based educational programme, "that should be responsive to the needs of people". It should assist people to understand their existing population situation, its causes and consequences, their impact on human life (family, nation, world) and through these understandings, provide motivation for certain actions that people must take (e.g. family planning, removal of illiteracy etc.)

Its core area is the dynamics of population derived from population studies. It is multi-disciplinary in nature to include key areas that touch on the human condition e.g. family life, national developmental effort, the natural environment, equality of life factors, human reproduction etc. The implications of a widening population base and the exponential nature of population growth, along with the factor of diminishing time over which population doubles, would be essential features of the country's Population Education programme.

Through innovative educational approaches the development of appropriate insights, value re-orientation and step by step actions modernising attitudes and acceptance of change can be generated. In this sense it is a form of social education.

To serve as a catalytic force that can contribute to change in human attitudes, a Population Education programme must evoke learner-interest. "Interest in Population Education does not automatically arise by the study of demography. An understanding of the meaning of population for the contemporary world, involves many elements which are marginal to demography". For this, the connotation of 'Population must shift from its existing narrow interpretation as 'population numbers' to a more meaningful concept.

Population is PEOPLE—human in the aggregate. Demography is a professional discipline! As biological organisms, human beings are a mammalian species and reproduce their own kind. As members of this species, they have certain innate drives—the most important being the drive to grow and develop (the human life cycle and the inter-relatedness of human growth and development). However, humans are distinguished from other mammals by the fact that they have a more developed brain structure—the cortex.

It is this potential—innate in all human beings, that makes it possible to transform the behaviour of children and adults to higher human ends.

Consequently, the concept of Population Education becomes more meaningful if we view 'POPULATION' as a 'potential human resource', and 'EDUCATION' as the process through which human beings are transformed into a resource.

Change begins in the minds of men. So it is to the minds of the target group

that Population Education must be directed. The attainment of innovative goals requires innovative approaches.

### **Innovative Approaches**

#### *Settings and Coverage*

The target group for a 'programme for human survival', connotes that all sections of the population—urban and rural, must be exposed to the programme. Existing educational structures provide the setting for all categories of youth and adults in the formal sector.

To provide a setting for that section of the non-formal sector which consists of illiterates, semi-literates, drop-outs; innovative approaches would include securing co-operation from local agencies for the use of a panchayat hall, a village school, a labour welfare centre etc. Since the attitudes of adults influence the younger generation, the programme must also reach policy makers, administrators, parents, teachers, community workers, developmental staff and public in general. Community channels, the work-place and mass media can be utilised for this purpose.

#### *Organisation of Population Concepts*

To incorporate Population Education into programmes for different categories of youth and adults is a challenge. Population concepts can be infused or integrated into an overall developmental framework; taught as a separate course; formulated into modules etc. These are technical decisions for each administrative category to formulate. It must be noted that without an overall design, loosely infused concepts lack coherence and meaning, hence invalidate the purpose for which Population Education has been introduced.

An integrated population design can be formulated by linking developmental activities, population, environment, health, family planning and other relevant information, into a well-knit, meaningful design under an overall framework eg. Today's Families, Human Ecology or other appropriate terms.

#### *Planning by Objectives*

Viederman<sup>7</sup> speaks of Population Education as "an educational process". Since the prowess is 'to assist learners' it follows that for Population Education to serve as a catalytic force to involve people in understanding their own problems and be motivated to adopt new attitudes, the emphasis must shift from the narrow parameters of "content" to an emphasis on the human being and human aspirations.

A scientific educational design offers the means of planning each step of the process in keeping with the needs and interests of the learner group and their existing level of perception in regard to population-related issues i.e. family, children, health, work, and all that constitutes their daily living. Having identified these and the time-frame of the session/project/programme, a plan can be formulated to suit any target group.

**Objectives** are the corner stone of an educational design. They spell out the purpose of an educational session/project/programme. General objectives are broad-based, they envisage over-all attainment, over a period of time.

Specific objectives pin-point precisely what is to be achieved (i.e. for each session or for a module). The outcomes desired are spelt out in behavioural terms viz. what the learner should attain at the level of:

- (a) awareness, knowledge, understanding (cognition)
- (b) value re-orientation, attitudes (affect)
- (c) action, doing (conation)

The more precise the understanding of the socio-cultural characteristics of the learner group and its concerns and interests, the more specific will be the planning of objectives. At any 'field level' the desired outcomes are to be brought about by using appropriate 'means'. These consist of sifting and selecting 'content' and 'methodology' or 'learning approaches', as would be relevant and effective for the attainment of planned objectives.

Each component as well as the outcome as a whole, can be tested or evaluated "in terms of outcomes". This evaluation provides insights for re-planning. Constraints due to design, implementation or any factor can be rectified. Thus objectives are re-formulated so that the desired direction of the plan is not deflected.

Planning by objectives is an exercise that can be undertaken from national to field level. It follows that each of the four components—objectives, content, methodology, evaluation—be viewed as intrinsic constituents of a total plan.

Telling or exhorting a group not exposed to modernising influences even to send a girl-child to school does not meet with approval, hence action does not follow since belief systems are linked with deep-seated 'feelings' (the 'affect dimension' of the human personality). Hence an educational process must be initiated by means of which the learner and the group are actively involved in the task of learning. Such a process uses population information and imaginative communication techniques, as tools for bringing about mental configurations that can generate new ideas (concepts/understandings).

Some specific event of interest or concern to the group, eg. a loan for a daughter's wedding; the child as an economic asset; can serve as entry points, so that a direction for step-by-step discussions on a large number of population-related issues, can be initiated. Formulated into a "problem situation", or a discussion point, each issue offers scope for the group to examine and offer their view points.

Thus the "curriculum" evolves in response to learner needs. This "personal experience" beginning with family and community, can be broadened to include national and global factors, if and where these are relevant.

Value re-orientation takes place when the inter-relationships between socio-cultural, economic, environmental, biological and other areas of everyday living, become evident. These inter-relationships evolve as a result of discussion, debate, problem-solving and other variations.

The change in perceptions is achieved as a result of the interactions between group members, trainers, resource persons and concrete situations or events in the learner's environment. Folk singers, bhajan mandalis, community festivals can be used as valuable resources, as also charts and sketches, songs and stories, role-play and other innovative activities. Along with the main discussions, involving the group to prepare or participate in some of these activities, generates confidence; the desire to find out, the opportunity to relate cause and effect factors. From these come basic modernising attitudes such as acceptance of change, lack of fatalism, a sense of the future, a sense of self-determination.

Fundamental to these achievements are the outcomes of each session and their integration into holistic mental patterns which necessitate a line of reasoning to provide sequence and meaning to the whole.

### *Parent Status*

The Ministry of Education and Culture (now Ministry of Human Resource Development) of the Government of India, in conjunction with UNFPA/ UNESCO (financial and technical support) co-ordinates different segments of the National Population Education Project.

Under the sixth Plan, Population Education has been institutionalised through school education upto standard tenth and incorporated into teacher training courses at all levels. In the non-formal sector, development of materials has been undertaken for illiterate, semi-literate youth and drop-outs (15-35 years) under the Adult Education Project.

In the seventh Plan period, Population Education in the formal sector will be promoted at the higher secondary level. The UGC-UNFPA project (commencing 1986) envisages the establishment of 12 Population Education Resource Centre (PERC's) in selected universities located in different parts of the country. Through these all universities will be reached.

The headway achieved as a result of earlier efforts for the promotion of Population Education through community channels, the NSS (National Service Scheme), Adult Education, schools of social work and other forms of extension education as well as via developmental agencies—governmental and non-governmental—provides scope for total coverage of the country's young age population and concerned adults. This requires net-working and co-ordination in several ways.

To harness the dynamism of youth for appropriate future action, a focus on family life, growing up, marriage and parenthood, affords scope for examining population processes in the family, where population change must start. Thus human biology, human reproduction and family planning information become part of the scope of Population Education. From these micro-level beginnings, Population Education broadens out to include national and global perspectives.

\*This would not interfere with the regular Family Planning programme which along with other developmental programmes continue with selected target groups.

With such interventions,\* Population Education can be viewed as a total programme incorporating population policy goals into national developmental goals.

To conclude, "Human resource development is the process of increasing the knowledge, the skills and the capacities of *all the people* in a society. In economic terms, it could be described as the accumulation of human capital and its effective investment in the development of an economy..... From the social and cultural points of view the development of human resources helps people to lead fuller and richer lives; less bound to superstition and unscientific beliefs. In short, the process of human resource development unlocks the door to modernisation".\*

Viewed as a human resources development programme, Population Education planned and implemented along innovative educational lines has the potential and flexibility for adaptation to become an intrinsic part of programmes for the uplift of women; children and other sections of society.

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# **THE MULTIPURPOSE HEALTH WORKER SCHEME IN GUJARAT: AN EVALUATION**

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## **Introduction**

In 1972, the executive committee of the Central Health and Family Planning Council recommended that "steps be taken to integrate medical, public health and family planning services at the peripheral level" with a view to strengthen the preventive and promotive, besides the curative, aspects of primary health care, especially in the rural areas where the majority of our country's population lives. In pursuance of this policy, the Government initiated the Multipurpose Workers (MPW) scheme in several states.

Since this scheme has been in operation for the past several years, it was thought worthwhile to evaluate its effectiveness. Therefore, the Population Research Centre, Baroda undertook a study to assess the manner in which the scheme has been working and its impact on the family welfare programme in Gujarat. The following aspects were studied:

- 1) The level of integration of the health, family welfare and nutrition programmes in the State.
- 2) The perception of MPWs about their role in the delivery of health, family planning and nutrition services.
- 3) The extent to which the scheme has resulted in more effective coverage of the population as also the working of the co-ordinated programme of health, family welfare and nutrition.
- 4) The impact of the scheme on the family welfare programme in terms of time devoted, population covered, motivational efforts and achievements as compared with that of family planning workers under the non-integrated approach.
- 5) The views of MPWs, PHC doctors and others about the working of the scheme, and in particular, record maintenance.

## **Sample and Methodology**

Based on the criterion of family planning performance, Baroda and Jamnagar districts were chosen from among the best and poor performance districts in Gujarat State respectively. Two PHCs from each of these districts were selected on the basis of the level of development of the Talukas in which they were located. Thus, Karjan PHC in Baroda district and Kalawad PHC in Jamnagar District represented the relatively better developed Talukas whereas

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Tilakwada and Kalyanpur PHCs were chosen from the backward Talukas of the two districts respectively.

The total number of sanctioned supervisors (including Medical Officers) in all the four PHCs was 47 of which 36 were available and interviewed; six posts were vacant and five supervisors were on leave. Of the 36 supervisors interviewed, six were Medical Officers, eight were Lady Health Visitors, four were Block Extension Educators and 18 were Multipurpose Health Supervisors. At the district level, seven officers comprising of two District Health Officers, two District Extension Educators, one Public Health Nurse and two Administrative Officers, were interviewed. On the other hand, out of the 90 sanctioned posts of Multipurpose Health Workers in these PHCs, 69 were available for interview while 19 were on leave and the remaining two posts were vacant. Thus, about 77 per cent of the supervisory level staff as well as field workers from the four PHCs in the study were covered.

Of the 69 trained MPWs, 37 were male and 32 female; about 80 per cent were currently married, 11 per cent were widowed or separated and nine per cent were unmarried. The majority (86 per cent) were Hindu. About three-fourths (74 per cent) had 8 to 11 years of schooling, 20 per cent had 12 or more years of schooling and the rest had been to school for less than 8 years.

## **Results and Discussion**

### **Workers' Opinion regarding the MPW Scheme**

#### *Role of Multipurpose Workers*

In order to deliver health and family welfare services as a package, the duties specified by the government for the MPW include: (i) identification and treatment of malaria cases; (ii) immunisation of children against DPT, TT, BCG and administration of oral poliomyelitis vaccine wherever available; (iii) identification of cases of malnutrition among children aged one to five and referring them to Balwadis/PHC for nutrition supplementation, distribution of iron and folic acid to children and pregnant mothers, and administration of Vitamin A solution to children; (iv) administration of medical care for minor ailments; (v) promotion of family planning services; (vi) promotion of sanitation practices; (vii) promotion of MCH services in the twilight areas; (viii) educating the community regarding the importance of registration of births and deaths; and (ix) maintaining up-to-date records.

When the MPW's role perception was analysed, family planning and MCH activities rated extremely high with 100 and 99 per cent respectively considering family planning and MCH as their major activities. Quite a substantial proportion of the workers (77 per cent) were also aware of their duties regarding the curative and preventive aspects of health, specifically the former. However, a very small proportion of the workers perceived nutritional supplementation (28 per cent) and record-keeping (1.4 per cent) activities as a part of their duties.

### *Activity of Greater Interest*

It is assumed that interest is a positive reinforcement and feedback. If a worker is interested in any activity he/she is bound to go out of the way to carry out the task assigned and is likely to be successful in producing the desired result.

When the MPWs were asked, "Which activity interests you the most?," as many as 43.5 per cent stated that they were interested in MCH activities. The next most interesting activity reported was health-related (29 per cent) followed by family planning. This indicates that given a choice the MPWs would prefer to devote their time to MCH activities rather than to family planning or health activities.

The relative interest expressed by the MPWs reflected the type of vertical programme which each of them had been implementing before the integrated scheme came into operation. Most of those who had worked as malaria workers mentioned their first choice as health activities, while those who had been vaccinators in the vertical programme spontaneously stated that the immunisation programme under the integrated health scheme gained first preference. Similarly, for an ANM, either MCH or family planning remained the first choice. This clearly suggests that though there is an integration of health and family planning at the peripheral level on paper, emotional integration with the present programme is almost absent in the workers.

### *Time-demanding Activity*

Eighty seven per cent of the MPWs reported that family planning activities took up most of their time; while 43.5 per cent and 35 per cent were of the opinion that MCH and health activities respectively, were most time-consuming. About three per cent of the workers identified nutritional activities as the most time-demanding. Further, most of the MPWs stated that family planning activities were not only time-consuming but that other programmes suffered because of it, after the integration.

### *Confidence Acquired & Satisfaction with the Training*

Training is a systematic diffusion of knowledge. The extent and type of knowledge when acquired, sustained and internalised is likely to develop differential confidence in dealing with problems which are likely to crop up during the course of work. When asked if they felt confident to perform their duties after the MPW training given to them, 40 per cent of the MPWs said that the training was adequate, while 60 per cent said that it did not generate sufficient confidence and satisfaction in them. The latter had been working as unipurpose workers (other than ANMs) or had directly joined as MPWs after the training. On the other hand, 72 per cent of the MPWs who had been ANMs under the earlier scheme, felt that the training given was complete and satisfactory and were quite confident about carrying out their duties satisfactorily. This may be due to the fact that the ANMs had already undergone two years of training



in nursing and the MPW training just worked as a refresher training for them.

However, 32 (24 MPWs and 8 ANMs) of the 69 MPWs felt that the MPW training given to them was not sufficient and the on-the-job training was very inadequate. They expressed the view that more refresher courses with an emphasis on the practical aspects, particularly in relation to immunisation, should be given so as to build up their confidence and help them to execute their duties with the ultimate motive of satisfying their clients. They also stressed the need for additional training in the processes of establishing better rapport and in motivating clients for family planning.

### *Job Satisfaction*

Of the 69 MPWs interviewed, one MPW and eight ANMs had either not worked as unipurpose workers or were unable to assess any difference in job satisfaction between the old and new schemes since their exposure to the earlier, unipurpose scheme had been too short. Therefore, these respondents were not considered in the analysis. Among the remaining, 28 per cent of the MPWs (who had either served as unipurpose workers in the earlier scheme), and 24 per cent of the ANM-turned MPWs expressed greater job satisfaction with the integrated health and family welfare scheme. On the other hand, as many as 67 per cent of the former and 52 per cent of the latter opined that their job satisfaction had decreased while the rest (5 per cent and 24 per cent respectively) said that the MPW scheme had not made any difference in terms of job satisfaction to them.

### *Reasons for Greater Satisfaction*

The MPWs who expressed greater job satisfaction after the initiation of the MPW scheme gave the following reasons:

1. They now provided both health and family welfare services including immunisation and family planning through a well-knit package. This generated more confidence among their clients and they, in turn, got more credit for the variety of jobs which they performed.
2. Motivation of couples for family planning was easy as frequent visits to the clients for multifarious activities, brought them closer to their clients and helped establish better rapport.
3. The population to be covered by each worker under the MPW scheme was less and the area to be covered was more compact.
4. The integration of multifarious activities helped dispel the monotony of a unipurpose job.

### *Reasons for Lesser Satisfaction*

As mentioned earlier, the majority (62 per cent) of the workers were dissatisfied with the MPW scheme, the reasons being:

1. The area and the population to be covered were greater as compared to the work to be performed (this was so because formally they performed only

one type of activity and found enough time for travel, whereas under the new scheme, the performance of multifarious activities at one place tended to take away a lot of their time).

2. Since a variety of activities had to be performed they did not feel confident. For example, they still felt hesitant to give immunisation services without the help of an ANM (the feeling prevailed that they had become a jack of-all-trades and a master of none).

3. The targets for the various activities given to them far exceeded what was feasible. As a result, they were unable to complete them. Most of the time available to them was taken up by family planning work and very little time was left to complete the targets set for other activities. Thus, other activities suffered at the cost of family planning activities.

4. The new scheme was associated with the problems of logistics eg. non-availability of medicines, stationery, conveyance and relatively lower PTA (Permanent Travelling Allowance).

5. Maintaining records for all the activities was a great bother because it was time-consuming and stationery was often not available.

6. The clients got irritated because they had to answer many questions regarding their health, MCH, family planning and nutrition. The workers therefore felt that they had been happier with the single activity performed by them earlier as compared with the multifarious activities under the MPW scheme.

### *Feasibility of Completing the Workload*

Eighty four per cent of the workers reported that it was not feasible to complete the workload given to them. Another 15 per cent felt that it was, while the remaining (one respondent) did not say anything as she had recently joined and had not been exposed to the various activities.

Those who felt that the workload was not too heavy gave the following reasons:

1. The population and the area allotted per worker was greater as compared to the workload.

2. The family planning targets could not be completed since most of the time was spent in motivational work.

3. Proper justice could not be done to all the activities, as the number of activities was far too great and the time far too less.

4. There was no conveyance to reach remote villages which do not have bus facilities (such facilities, if available for remote areas, could certainly help in improving the efficiency of the worker).

5. It was difficult to maintain TPM (time, place and movement) because the establishment of rapport with family planning clients consumed much more time than was normally allotted. As a result, the work in terms of performance fell short of what was expected (this happens because several times, hurriedly prepared cases for family planning back out from their commitment).

6. It was difficult to maintain up-to-date records because of lack of time and non-availability of stationery.

7. Lack of facilities for immunisation work and the shortage of medicines were great hindrances in completing the required quantum of work.

### *The MPW Programme vis-a-vis Vertical Programmes*

When asked to compare the MPW scheme with the earlier vertical programmes—14 per cent had not had a chance to work as unipurpose workers under the vertical scheme—51 per cent of the remaining (86 per cent) indicated that the MPW scheme was positively an improvement over the vertical programmes. The rest (35 per cent) of the respondents however, favoured the unipurpose scheme.

Those who were in favour of or against the MPW scheme gave similar reasons as those given by them for experiencing greater or lesser job satisfaction. Thus:

1. Those who had been originally working as malaria workers felt that by integrating health and family welfare, the malaria work had suffered instead of improving.

2. Under the unipurpose scheme they used to perform only one type of work confidently and lacking the confidence, felt hesitant to perform all their expected tasks under the MPW scheme.

3. The time spent in motivating illiterate people for family planning was considered to be a hindrance in the performance of their other allotted tasks.

4. The time allotted to them as compared to the multi-faceted nature of their work was far too less vis-a-vis the unipurpose work. They advocated a reduction of the population size and area per worker to achieve the desired results.

### *Co-operation from Clients*

Before the introduction of the MPW scheme, the planners and policy makers had envisaged that this well-knit package of health and family welfare services would improve the all-round performance of individual activities in these fields through better cooperation and more client satisfaction. When asked whether co-operation from their clients had undergone a change after the initiation of the MPW scheme, about two-thirds of the MPWs, who had earlier worked as unipurpose workers, answered in the affirmative, about 14 per cent did not and the rest (10 per cent) did not find any change in their clients' behaviour.

The increased client co-operation experienced by the majority of MPWs was attributed to the fact that the integrated approach:

1. brought them in contact with their clients more often than otherwise, helping them to establish greater rapport with and receive greater co-operation from their clients so that they could cater satisfactorily to their health and family planning needs; and

1. Some people did not like them because they now talked to them about

family planning and tried to motivate them.

2. Non-availability of the requisite quantities of medicines prevented them from gaining the confidence of and co-operation from their clients.

3. The multi-faceted nature of their duties which did not give them sufficient time to make home visits for follow-up, as a result of which their clients were disappointed.

4. The clients' fear of vaccination (this, however, is unrelated to the MPW scheme and is a general fear of vaccination).

### **The Supervisors' Opinion Regarding the MPW Scheme**

After having ascertained the opinion of the MPWs with regard to various aspects of the MPW scheme, the opinion of their supervisors was sought on these aspects and is discussed below.

#### *Adequacy of the MPW Training*

The majority of the supervisors (77 per cent) were of the opinion that the training imparted to the MPWs was not adequate, the main reasons being the practical aspects, which would enhance experience and facilitate working were nearly absent; the short duration of the training; and the need for reorientation training. About six per cent of the Supervisors felt that the training syllabus was not well-planned and hence the training was given in a haphazard manner.

#### *Opinion about Integration*

Only 12 per cent of the Supervisors felt that the integration of health and family planning services was good whereas the large majority (84 per cent) felt otherwise and the remaining were not sure about it.

The most common reason expressed by about 81 per cent of the Supervisors for their negative feeling was : "As there is no integration at the higher level i.e. at the district and state levels, integration at the PHC level is not operational". Nearly 50 per cent felt that inspite of the integration, separate offices for malaria etc. continued to exist and thus, certain specific programmes were being given more importance.

#### *Co-operation of Workers After Integration*

When asked whether the degree of co-operation received from the MPWs had changed after the integration, 30 per cent of the Supervisors said that it had increased while about 14 per cent felt otherwise. The majority of the Supervisors (about 56 per cent) however, did not find any change in the behaviour of the MPWs before and after the implementation of the scheme.

Those who found a positive change mentioned the following reasons in order of importance:

1. Since the PHC is the administrative unit, the MPWs worked better than when they were governed by the various government departments

2. The MPWs, now had a more comprehensive knowledge of the different

programmes, and hence took a greater interest in the work.

3. After the integration, there were more male workers who encountered fewer problems in executing their duties, as compared to their female counterparts, and hence could work better.

4. The population to be covered was relatively less.

On the other hand, Supervisors who felt that co-operation from the MPWs after the inception of the integrated scheme had decreased indicated the following reasons in support of their statement:

1. The workers were unable to complete the different targets because they had to perform several activities as against only one activity in the earlier scheme.

2. "There are now many bosses and hence less co-operation."

### *Advantages and Disadvantages of the Integrated Programme*

When asked to specify the advantages of the integrated scheme, about 9 per cent categorically stated that the integrated scheme had no advantage. The most important advantage as reported by about 47 per cent of the Supervisors was that one worker provided all the services. About 35 per cent of the Supervisors were of the view that due to frequent visits of the health worker, the people become aware of various health and family planning services and can avail of the same. Another advantage reported by about 26 per cent of the Supervisors was that "People get all health services at their doorstep under the integrated scheme", whereas about 23 per cent felt that as each worker under the present scheme, had to cover a relatively more compact area and lesser population, the integrated scheme had an added advantage. Some Supervisors also mentioned, "ease in Supervision", "generation of team work" and "increased work out-put" as additional advantages of the integrated scheme.

Besides, the above-mentioned reasons, most of the Supervisors were of the view that a number of MPWs did not like the multipurpose nature of the work and therefore, they received less cooperation from them.

### *Satisfaction with the Integrated Scheme*

Though the majority of the Supervisors (61 per cent) expressed their satisfaction with the working of the integrated scheme a significant percentage (39 per cent) expressed their dissatisfaction with its working. Of the latter, nearly 18 per cent felt that the MPWs did not have sufficient time to cope up with the multifarious activities they had to perform while 23 per cent were of the opinion that the area given was too scattered and hence the population coverage should be less. This may particularly be true in the case of tribal areas, where people live in different hamlets and the distance between two hamlets is quite large. Inadequate training was also expressed as one of the handicaps.

### *Programme(s) which have Suffered or Benefitted due to Integration*

A substantial proportion (56 per cent) of Supervisors felt that one or the other health and family welfare programme had suffered due to the implementation of the integrated programme for the following reasons:

1. Though the targets for most of the health and family welfare programmes are fixed in advance, the urgency for completing or even surpassing the targets set for certain programmes is stressed by the administrators by organising various campaigns for those programmes. As a result some programmes suffered at the cost of the privileged ones.

2. Since the family planning programme is associated with various incentives the MPWs preferred to devote more attention to this programme.

3. The lack of proper practical training, makes some workers feel hesitant to deliver services like immunisation and this sometimes becomes an inhibiting factor in the implementation of certain health programmes.

Among the Supervisors, who opined that one or more programmes had benefitted due to integration, 95 per cent were of the view that the family planning programme had benefitted the most; about 13 per cent felt that both health and family welfare programmes had benefitted.

About a third of the Supervisors did not see any disadvantages in the integrated scheme. The remaining reported one or more disadvantages the most common being that "the workers cannot pay equal and simultaneous attention to all the health programmes" (stated by 30 per cent of the Supervisors). This was followed by, "MPWs are not given medicines and equipments to cater to the needs of all the people for various programmes" (by 19 per cent); "some workers do not get benefits (like promotion, PTA and stationery) which they were getting prior to integration" (14 per cent); and "too many supervisors" (19 per cent). A few (7 per cent) mentioned that TPM restricted the movement and freedom of the workers which eventually becomes an inhibiting factor.

### *Feasibility of the Workload*

When asked to opine regarding the feasibility of completing the present workload of the MPWs, the Supervisors in a good majority (67 per cent) indicated that it was not feasible. The major reasons given were the greater population to be covered with respect to the multifarious activities which the workers are required to perform, and the increase in the workload with the increasing targets for various programmes.

### *Suggestions for Programme Improvement*

The Supervisors were also asked to suggest some improvements in the integrated approach and the working of the scheme. Among the important suggestions which emerged were:

1. The area and the population coverage per worker should be reduced and made compact.

2. The family planning programme should be separated from other programmes so that the latter do not suffer because of the former.

3. Stationery, PTA, medicines and other equipments should be supplied to the workers in requisite quantities.

4. Transport facilities should be given to all the workers, especially when

visiting remote rural areas.

5. Medicines for some of the common ailments should also be provided so that the work does not suffer and they can serve their clients better.

6. Refresher training should be given to the workers as well as to the Supervisors from time to time.

7. The importance of the proper monitoring of each programme should be emphasised from the State to the district, and to the PHC level.

### **Feed-back into the Programme**

Some of the suggestions and recommendations emanating from the study for feed-back into the programme are:

1. There appear to be enormous logistic problems like shortages of medicines, non-availability of proper equipment such as spirit, sufficient number of needles for immunisation, stationery for maintaining records, storage facilities etc. For efficient implementation of the MPW scheme, these problems should be solved as far as possible.

2. Some workers are not confident about implementing their duties efficiently due to lack of practical training. Practical training in immunisation and a knowledge of various motivational techniques for family planning is urgently desired. This could be done through refresher courses.

3. Only female workers should be given the task of motivation for family planning as better rapport could be established without female clients being embarrassed when a male worker approaches them for family planning (invariably, male members are seldom at home during the day time and so it becomes difficult for the male workers to meet them and to talk to them).

4. Keeping in view the multifaceted nature of activities of the MPW, a relatively lesser coverage would enable them to make frequent house visits and generate client satisfaction as well as confidence the programme.

5. The targets set for various activities should be reduced keeping in view the feasibility of achieving the targets for all the different services given by the worker.

# **FERTILITY IN KARNATAKA STATE DURING 1971-1981: AN APPLICATION OF BONGAART'S MODEL**

**MR. R.L. PATIL +**

## **Introduction**

The 1981 Census revealed that the population of Karnataka State grew at a much faster rate than that of India. The inter-censal national growth rate was 24.8 per cent while that of Karnataka was 26.4 per cent, 1.6 points more than the national level. Obviously, one of the important reasons attributed to this accelerated growth was a decline in mortality levels – the crude death rate (CDR) had registered a 25 per cent decline between 1971-81 – the CDR which was 12.3 in 1971 had declined by three percentage points (9.3) in 1981. The net in-migration to the State being less than 1 per 1000 population<sup>1</sup> was negligible. However, the observed population growth would not have been possible without a substantial contribution occurring from higher fertility levels. Therefore, it was considered worthwhile to determine if there was any change in the fertility level, and if so, the direction of change. Unfortunately, since information on fertility levels is not well documented; the basic problem was that of obtaining reliable measures of fertility both for 1971 and 1981.

The primary objective of this paper thus, was to derive plausible estimates of fertility levels in Karnataka State for 1971 and 1981. The Bongaarts<sup>2</sup> model of proximate determinants of fertility was applied subsequently to examine the extent of change that had come about in the level of fertility.

## **Data and Methodology**

The earlier estimates of fertility levels for 1971 for Karnataka State were given by Srinivasan<sup>3</sup>. According to his estimate the crude birth rate (CBR) for 1971 was 31.7 and the total fertility rate (TFR) was 4.4. The fertility estimates based on 1981 census data on children ever born gives a CBR of 35.6 and a TFR of 4.6.<sup>4</sup> In the light of the 1981 estimates, the 1971 estimates appear to be under-estimated and in need of correction. Therefore, the 1971 CBR was computed by the application of Preston's method<sup>5</sup> which yielded a CBR of 42.1 for 1971. The number of births for 1971 were thus obtained on the basis of a CBR of 42.1. These births were distributed in the reproductive ages by the patterns of births given by Srinivasan<sup>3</sup> to obtain the age-specific fertility rate (ASFR) for 1971. The corrected ASFR for 1971 yielded a TFR of 5.3. The data on proportion married for 1971 and 1981 were readily available from censuses. The information on the number of eligible couples and percentage of couples effectively protected for 1971 and 1981 were obtained from the Family Welfare Year Books<sup>6</sup>.

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Bongaarts'<sup>2</sup> model of proximate determinants of fertility was utilised to estimate fertility change. According to Bongaarts, all variations in fertility behaviour in any population are due to changes in only four factors, viz. (i) proportion married, (ii) contraceptive use, (iii) incidence of induced abortion, and (iv) post-partum infecundability. These proximate determinants were quantified to explain changes in fertility levels in Karnataka State.

In his formulation, the total fertility rate in a population is expressed as the product of four indices measuring the fertility inhibition effect of these four factors and the total fecundity rate (TF). The total fecundity rate is the average number of live births expected among women who remain married during their entire reproductive period, do not use contraception, do not have any induced abortions and do not breast-feed their children. Therefore, according to Bongaarts' Model,

$$\text{TFR} = \text{Cm} \times \text{Cc} \times \text{Ca} \times \text{Ci} \times \text{TF} \dots\dots\dots \text{Eqn. 1}$$

where Cm is the index of proportion married

Cc is the index of non-contraception

Ca is the index of non-abortion and

Ci is the index of lactational infecundability

The change in fertility over a period of time is expressed in terms of changes in the indices of the proximate determinants (our reference period is 1971-1981 and hence the equation). The change would be expressed as:

$$\frac{\text{TFR (81)}}{\text{TFR (71)}} = \frac{\text{Cm (81)}}{\text{Cm (71)}} \times \frac{\text{Ca (81)}}{\text{Ca (71)}} \times \frac{\text{Cc (81)}}{\text{Cc (71)}} \times \frac{\text{Ci (81)}}{\text{Ci (71)}} \times \frac{\text{TF (81)}}{\text{TF (71)}} \dots\dots\dots \text{Eqn. 2}$$

However, there is no reason to believe that TF has changed over time and hence  $\text{TF (71)} = \text{TF (81)}$ . Therefore, the equation would be:

$$\frac{\text{TFR (81)}}{\text{TFR (71)}} = \frac{\text{Cm (81)}}{\text{Cm (71)}} \times \frac{\text{Cc (81)}}{\text{Cc (71)}} \times \frac{\text{Ca (81)}}{\text{Ca (71)}} \times \frac{\text{Ci (81)}}{\text{Ci (71)}} \dots\dots\dots \text{Eqn. 3}$$

The values of these four indices were estimated from the available information for the years 1971 and 1981.

## Results

Table 1 gives the per cent distribution of currently married women by age. A comparison of 1971 and 1981 data shows a sharp fall in the proportion married in the younger age groups of 15-19 and 20-24 years indicating a rise in the age at marriage.

TABLE 1  
Percent women currently married in Karnataka by age

Age (years)	1971	1981
15-19	49.0	36.2
20-24	84.8	78.8
25-29	94.0	92.7
30-34	91.8	93.0
35-39	88.8	91.0
40-44	79.7	84.2
45-49	71.7	77.5

Source Superintendent of Census Operations, Mysore (1966) and Director of Census Operations, Mysore (1980).

(i) *The estimation of Cm:*

Bongaarts defines the index of proportions married (Cm) as the weighten-  
ed average of age specific proportions married. The age specific marital fertili-  
ty rates are used as weights. Using Bongaarts' notations:

$$Cm = \frac{\sum m(a) g(a)}{\sum g(a)}$$

where m(a) is the proportion married and g(a) the marital fertility rates.

TABLE 2  
Age Specific Fertility Rates per woman and Age Specific Marital Fertility Rate, Karnataka, 1971-1981.

Age (years)	Age specific fertility rate per woman			Age specific marital fertility rate per woman		
	1971*	1981**	Percent change	1971	1981	Percent change
15-19	0.118	0.105	- 18.0	0.258	0.290	12.0
20-24	0.259	0.261	Nil	0.298	0.331	11.0
25-29	0.271	0.236	- 13.1	0.289	0.254	- 13.0
30-34	0.191	0.159	- 17.0	0.208	0.169	- 19.0
35-39	0.143	0.098	- 32.0	0.161	0.109	- 33.0
40-44	0.056	0.046	- 18.0	0.070	0.054	- 22.0
45-49	0.019	0.016	- 16.0	0.027	0.020	- 26.0
Total fertility rate	5.3	4.6		6.5	6.1	
Crude birth rate	42.1	35.6	16.0			

(Negative signs indicate decline)

\* The ASFR schedule given by Srinivasan<sup>1</sup> was corrected and utilised.

\*\* Institute for Social and Economic Change—Population Projections for Karnataka, 1981-2001—. These estimates were derived by using the P/F ratio method of Brass from 1981 census information on children ever born.

The values of age-specific marital fertility used for estimating the index of  $C_m$  are given in Table 2. The age specific marital fertility rate (ASMFR) for the 15-19 age-group has been replaced by  $0.75 \times \text{ASMFR} (20-24)$  in the denominator of the equation for  $C_m$ . This was done because married women in the 15-19 age-group were mostly 18 or 19 years old and they were therefore not representative of the entire group. The value of  $C_m$  for 1971 was 0.701 or the proportion married in 1971 was 70.1 per cent. Similarly, the value  $C_m$  for 1981 was 0.633, i.e. in 1981, 63.3 per cent of the women in the age-group 15-49 were married as against 70 per cent in 1971. The ratio of the proportion married in 1981 to that of 1971 being 0.902, showed a decline of 9.8 per cent among married women in the 15-49 age-group in 1981 over the 1971 figure. The net effect of decline in the proportion married was the result of a rise in the age at marriage which decreased the proportion married; but this effect was partially neutralised by the declining incidence of widowhood.

TABLE 3  
Percent of couples currently protected by contraceptive methods

Year	Number of eligible couples	Percent of couples protected by		
		Sterilisation	IUD	Other methods
1971	524,300	9.8	1.2	0.6
1981	636,400	20.9	1.5	0.9

The information required for the estimation of the index  $C_c$ , the proportion of non-contraceptors given in Table 3 was obtained from the Family Welfare Year Books<sup>6</sup> for 1972 and 1982.

According to Bongaarts, the index  $C_c$  is to be estimated from the information on age patterns of current contraceptors. However, in the absence of age specific use rates, the proportion of all married women of reproductive age who currently uses contraception, a variable for which data is widely available may be used. Therefore, it was proposed to use the data on the proportion of couples effectively protected. There were however, some problems in the use of official statistics as they are subject to estimate and compilation errors<sup>7</sup>. The official estimates do not take into consideration the use of traditional methods of family planning by couples. Therefore, the estimates of current use based on official statistics need to be adjusted downwards for potential over-estimation and upwards for the use of traditional methods. This was done on the basis of the results of a nation-wide sample survey<sup>8</sup> sponsored by the Department of Family Welfare. According to this survey the sterilisation figures were over-estimated by 25 per cent, the IUD figures by 59 per cent, and conventional contraceptive users or users of other methods were underestimated by 1 per cent. The survey further observed that 4 per cent of users of other methods should be added to the existing number of couples protected by conventional contracep-

tives, to compensate for the non-inclusion of uses of traditional methods in the official statistics. The corrected figures were as follows:

Year	Percentage of couples protected by		
	Sterilisation	IUD	Other methods
1971	7.35	0.492	4.6
1981	15.67	0.615	4.9

(ii) *The estimation of Cc:*

Using the Bongaarts notations,

$$C_c = 1 - 1.08 \times u \times e$$

where,  $u$  = The average number of users

$e$  = effectiveness of contraception. The effectiveness rate for various methods was: Sterilisation: 1; IUD : 0.95; and other conventional contraceptive methods; 0.70

The number of contraceptors was inflated by 1.18 before being subtracted from among the total number of eligible couples to account for those with primary sterility. The values for  $C_c$  for 1971 and 1981 thus obtained were 0.8698 and 0.7677 respectively.

The ratio of non-contraceptors in 1981 over 1971 was  $0.7677/0.8698 = 0.8826$  and the percentage decline in the proportion of non-contraceptors was 0.1174 or 11.74 per cent.

(iii) *The estimation of Ci:*

The information on the duration of breast-feeding for the State and consequent lactational infecundability is lacking. In order to overcome this difficulty, the data on the extent of breast-feeding was borrowed mainly from three surveys conducted in the rural areas of Punjab<sup>9</sup>, Uttar Pradesh<sup>10</sup> and Tamil Nadu<sup>11</sup>. These surveys provide an average duration of breast-feeding of 20 months around the 1970s. Based on this, two assumptions were made viz; (a) that the duration of breast-feeding has remained unchanged, and (b) that the duration of breast-feeding has declined by two months, that is, from 20 months in 1971 to 18 months in 1981 due to a rise in the female literacy rate as also due to a rise in the proportion of urban women. Using these assumptions the index  $C_i$  or lactational infecundability was estimated by the relationship given by Bongaarts. According to Bongaarts,

$$C_i = \frac{\text{Birth interval in the absence of lactation}}{\text{Birth interval with lactation}} \\ = \frac{20}{18.5 + i}$$

where 'i' is derived in the relationship

$$0.1396 B - 0.001872 B^2$$

$i = 1.753 e$ ; and  $B$  stands for the duration of breast-feeding.

$$\text{The value of } C_i \text{ for 1971} = \frac{20}{32.02} = 0.625$$

$$\text{The value of } C_i \text{ for 1981} = \frac{20}{30.28} = 0.660$$

The 1981  $C_i$  assumes a decline of 2 months in the duration of breast-feeding. Thus, it may be noted that due to a decline in the duration of breast-feeding in 1981 the birth interval which was 32.02 months in 1971 has fallen to 30.28 months in 1981. This has fertility increasing effects. The effect of the decline in the duration of breast-feeding on TFR is shown later.

(iv) *The Estimation of  $C_a$ :*

The assumption here is that the incidence of induced abortions has remained unchanged since 1971. This assumption appears to be valid in the light of the fact that the facilities for induced abortion have not spread over to rural areas and that the rise in the number of induced abortions as indicated in the official statistics is more or less indicative of a shift from illegal abortions to legal abortions.

TABLE 4  
Quantified values of indices of proximate determinants of fertility

Index	1971	1981	Ratio of 1971/1981
$C_m$ , Index of proportion married	0.701	0.663	0.902
$C_c$ , Index of non-contraception	0.8698	0.7677	0.8826
$C_i$ , (a) Index of lactational infecundability assuming a decline of two months in the duration of breast-feeding	0.625	0.660	1.056
(b) No change in the duration of breast-feeding	No change		1
$C_a$ , Index of non-abortion	No change		1

The interaction effect of the four proximate determinants assuming a decline of two months in the duration of breast-feeding =  $C_m \times C_i \times C_c \times C_a = 0.9902 \times 0.8826 \times 1.056 \times 1 = 0.8406$ , while the interaction effect with no change in breast-feeding duration =  $0.902 \times 0.8826 \times 1 \times 1 = 0.796$

Table 4 shows that since 1971, the proportion married in the reproductive ages declined by 9.8 per cent, the proportion of non-contraceptors declined by 11.74 per cent, and the period of lactational infecundability declined by 5 per cent. This has an increasing effect on fertility.

For an estimate of the change in total fertility rate (TFR) since 1971, the interaction effect of the four proximate determinants of fertility should be

multiplied with the observed TFR of 1971. So the change from 1971 to 1981 was  $0.8406 \times 5.3 = 4.45$ .

The observed TFR in 1981 being 4.6 is almost the same as that derived from the interaction effect of the proximate determinants. This has two implications. The first that our estimate of a TFR of 5.3 children per woman in 1971 gains credibility and second, it is just likely that the duration of breast-feeding had declined by two months since 1971.

The second estimate of fertility change can be derived by assuming no change in the duration of breast-feeding. The TFR change then would be the interaction effect of the proximate determinants with no change in breast-feeding duration multiplied by the 1971 TFR which is  $0.796 \times 5.3 = 4.2$ . The estimated change in TFR of 4.2 is less than the observed TFR of 4.6 by 8 per cent.

### Discussion

The analysis indicates that the crude birth rate in Karnataka state declined by 16 per cent from 42.1 births per 1000 population in 1971 to 35.6 in 1981. This decline was primarily the result of a decline in the age specific fertility rates. Fertility declined in all age-groups except the 20-24 age-group. The fertility decline was conspicuous from age 25 onwards reflecting a rise in the number of contraceptors. Between 1971-1981, the proportion of non-contraceptors declined by about 12 per cent. Another important fertility inhibiting factor observed from the present analysis is the change in marriage patterns as indicated by a 9 per cent decline among the proportions married in the 15-49 age group.

Available information on the proximate determinants of fertility for Karnataka showed that since 1971 the TFR has declined by an estimated 16 to 20 per cent. The lower estimate of 16 per cent is based on the assumption that the duration of breast-feeding has declined. On the basis of the changing trend in the proximate determinants, a TFR of 4.6 in 1981 appears to be a reasonable estimate. In the light of a rise in the expectation of life at birth for females, a TFR of 4.6 suggests a very high potential of growth in the coming decades. For instance, it is estimated that the expectation of life at birth for Karnataka females was 57.3 years in 1981 which yields a Net Reproduction Rate(NRR) of 2.16. A NRR of 2.16 has a high potential for population growth in the coming decades.

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# **THE PATTERN OF MALE STERILISATION IN SRI LANKA : A PRELIMINARY SURVEY**

**DR.DEWAGE SIRIPALA+**

## **Introduction**

In recent years, sterilisation as a method of family planning, has become increasingly popular among Sri Lankans.<sup>1,2</sup> After the present government assumed office (since 1977 to date) a new package of population policies<sup>1</sup> was introduced. The government was concerned about the growth rate of the population and wished to take meaningful action to curb its unplanned growth. Family planning services were enhanced with a view to controlling the population explosion. Since then, facilities have been made available for motivated couples to receive family planning services and undergo vasectomy and tubectomy operations

To achieve the goal of controlling the growth rate of the population, the government introduced an incentive payment scheme. Under this scheme<sup>1</sup>, Rs. 65.00 was paid for female sterilisation and Rs. 35.00 for male sterilisation (in 1979) to medical and paramedical personnel who carried out sterilisation work. Subsequently, in January 1980, the government also introduced an incentive payment of Rs. 100.00 (US \$ 6.25 approximately) to all those who accepted sterilisation voluntarily. In addition to the cash incentive (for both government and private sector employees) three days leave for a male and seven days leave for a female sterilisation acceptor was granted. This leave was in addition to the leave that the employees were normally entitled to.

The introduction of cash incentive payments to the acceptor led to a sudden increase in the number of sterilisations from 35,643 in 1979 to 112,926 in 1980 (Table 2). The amount of incentive paid also underwent changes from time to time (Table 1). According to the Minister of Health,<sup>4</sup> the payments to the acceptor were reduced because the demand for voluntary surgical contraception (VSC) had been unexpectedly high. However, the total number of acceptors of VSC too changed along with the changes in the incentive payment scheme. This phenomenon is further evident in the records of the vasectomy operations carried out at the clinic of the Sri Lanka Association for Voluntary Surgical Contraception (SLAVSC) in Kandy (Table-1).

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TABLE 1

Acceptors of Voluntary Surgical Contraception in Sri Lanka, 1971-1985

Year	Male Number	Acceptors %	Female Number	Acceptors %	Total Sterilisation acceptors
1971	245	5.1	4090	94.9	4335
1972	498	5.2	9078	94.8	9576
1973	1850	9.1	18398	90.9	20248
1974	7292	17.2	34942	82.8	42234
1975	6034	15.4	33130	84.6	39164
1976	2924	8.2	32664	91.8	35588
1977	1302	6.8	17752	93.2	19054
1978	2325	10.5	19624	89.5	21949
1979	5640	15.8	30003	84.2	35643
1980	51284	45.4	61642	54.6	112926
1981	30333	39.5	46300	60.5	76633
1982	13072	21.1	48876	78.9	61948
1983	43295	42.8	57743	57.1	101038
1984	37476	37.1	63347	62.9	100823
1985	17332	24.5	53999	75.5	70631

After the introduction of the package of population policies, the pattern of sterilisation also changed (Table 1). For example, males were more inclined to prefer the permanent method of contraception. The percentage of males sterilised in 1979 was 15.82 as compared to 45.41 in 1980. Furthermore, these percentages also varied with changes in the incentive payment. As revealed in Table 1, with a reduction in the incentive money from Rs. 500/- to Rs. 200/- in 1981, the percentage of male-acceptors dropped by 18.4%. The payment was again increased to Rs. 500/- (US \$ 27.2 approximately) in June 1983 and there was a substantial increase by 42.85 percent in the number of male acceptors.

This phenomenon has also been identified by Kodagoda,<sup>5</sup> Williams<sup>6</sup>, and several others. Many countries provide some form of incentive to couples practicing family planning. In Asia, financial incentives particularly for sterilisation, are provided only in India, Bangladesh, Nepal and Sri Lanka. The financial incentives offered in Sri Lanka are the highest among Asian countries<sup>7</sup>.

The purpose of this study is to identify some of the crucial socio-economic factors leading to the acceptance of voluntary surgical contraception as a method of family planning among Sri Lankan males.

The major socio-economic factors that are decisive in the acceptance of sterilisation are the level of education of both the husband and wife, age

TABLE 2

Number of vasectomy operations carried out in SLAVSC Clinic in Kandy

Year	No. of operations	Incentive payment to acceptors (Rs)
1980 July	16	100/-
August	—	100/-
September	94	100/-
October	675	500/-
November	1089	500/-
December	1752	500/-
1981 January	1051	500/-
February	584	500/-
March	67	200/-
April	13	200/-

of the couple, family income, type of occupation, place of residence, type of dwelling, number of living children, attitudes about children, availability of temporary contraceptive methods etc. However much these factors seem significant in the present study, it has not been possible to investigate all of them since this exercise had to solely depend on the data available at the SLAVSC Clinic, Kandy.

### Data

The first 100 VSC acceptors registered in the months of October and November 1986 at the SLAVSC Clinic's registry constituted the sample for the study. Though this method of selection is not strictly random, it could still be considered random because in normal circumstances, people visit this clinic randomly. It was found that this sample represented different communities, religious groups and income groups in the area.

Family planning and sterilisation services are available all over Sri Lanka. Therefore, the data obtained from the SLAVSC Clinic in Kandy, could be regarded as a sample largely representative of the district of Kandy.

### Findings and Discussion

#### *Ethnicity, Religion and Acceptance of VSC*

The approximate percentages of ethnic groups in the population of Kandy district, according to the 1981 census, was: Sinhalese: 75 per cent, Moors: 10.5 per cent, Indian Tamils: 9.4 per cent, and Sri Lankan Tamils: 5 per cent. All the major ethnic groups were found to be represented in the sample

(Table 3).

It is useful to note that the percentage of VSC acceptors from the Sinhalese community was slightly higher than their proportion in the population. Among the Tamils, whereas their percentage in the population was 14.4, the percentage of acceptors was 21. On the other hand, the percentage of Moor acceptors was only 2 as compared to their population percentage of 10.5. Table 3 shows that Tamils were more inclined to accept voluntary surgical contraception as compared to the other major ethnic groups while Muslims were much less responsive to the programme.

TABLE 3

Acceptance of voluntary surgical contraception by ethnicity and religion

Ethnic Group	No of acceptors	% of population in Kandy District in 1981
<i>Ethnic Group</i>		
Sinhalese	154 (77.0)	74.6
Tamils (Indian and Sri Lankan)	42 (21.0)	14.4
Moors	4 (2.0)	10.5
<i>Religious Group</i>		
Buddhists	155 (77.5)	74
Hindus	34 (17.0)	13
Catholics/Christians	7 (3.5)	3
Muslims	4 (2.0)	11

Figures in brackets denote percentages

The acceptors of VSC were also grouped according to their religion. In the sample there were Buddhists, Hindus, Muslims and Catholics and non-Catholic Christians (Table 3). According to the census of 1981, 74 per cent of the population of the area was Buddhist; however, 77.5 per cent of the acceptors were Buddhist. The percentage of Hindus who had undergone VSC was 17 although their proportion in the population of Kandy district was only 13 per cent.

This comparison reveals that Hindus were much more inclined to accept a permanent method of contraception than any other religious group. The Buddhist population, however, had responded positively to the sterilisation programme by accepting VSC as a method of family planning.

This phenomenon has also been studied by Najimudeen,<sup>8</sup> in the Batticaloa district of Sri Lanka. He observed that out of 1265 vasectomy acceptors in 1980, there were 951 Hindus, 114 Muslims, 58 Buddhists and 119 Christians. As compared with the population of the district in 1980, there

were 3.95 per cent Buddhists, 49.50 per cent Hindus, 40.94 per cent Muslims, and 5.19 per cent Christians. The study revealed that 75.19 per cent of total vasectomy acceptors were Hindu compared with their share of the population of 49.8 per cent, whereas 9 per cent of the acceptors were Muslim compared to their share of the population of 40.94 per cent. Therefore, it can be concluded that Muslims were less responsive to the family planning programme. The reason for this has not yet been studied.

#### *Age and Acceptance of VSC*

The age of the couple practicing family planning is one of the prime determinants of a population policy. The fertility of the male, unlike that of the female is not periodic. However, the fertility of the male decreases with age. Hence, the acceptance of sterilisation at an early age is more effective than accepting it late, because a longer period of male fertility is curtailed. Therefore, the age at which a couple accepts sterilisation is an important aspect in the analysis of the effectiveness of a family planning programme.

In the study sample, only 4.5 per cent (1 respondent) of the acceptors were under 25 years of age and 15.5 per cent were below 30 years (Table 4). However, 30.5 per cent of the acceptors were over 40 years. The majority had accepted sterilisation between 30-40 years and they constituted 53.5 per cent of the total number of acceptors. It is useful to note that the age at marriage in the area was 28.6 years according to the 1981 census. The need for sterilisation comes a few years after marriage and this might explain why 53.5 per cent of the acceptors fall into the 30-40 age group.

#### *Economic Factors and Acceptance of VSC*

At the 1974 World Conference on Population, held in Bucharest, most developing countries were suspicious that population control, being offered to them by the West, was a substitute for development aid. The communist block argued that development was the best contraceptive and if the government took care of the people, the population would take care of itself. The Western industrialised countries, on the other hand, argued that rapid population growth in itself was a major obstacle to economic and social development.

Socio-economic factors are most crucial in the acceptance of fertility control measures in developing countries.<sup>9</sup> In Sri Lanka, VSC has been the most popular method in recent years. The permanent method of contraception has become popular in the island probably because temporary methods are relatively expensive. For instance, the pill, condoms and the like, have to be bought in the open market. On the other hand, the availability of these temporary methods in remote areas is less. In case of a shortage in supply,

TABLE 4

**Distribution of VSC acceptors by age, income, occupation and educational level**

Characteristic	No. of acceptors
<b>Age (years)</b>	
Less than 25	1 (0.5)
26-30	31 (15.5)
31-35	50 (25.0)
36-40	57 (28.5)
41-45	37 (18.5)
46 and over	24 (12.0)
<b>Monthly income (Rs )</b>	
0-299	17 (8.5)
300-499	71 (35.5)
500-999	78 (39.0)
1000-2000	30 (15.0)
2001-5000	4 (2.0)
<b>Occupation</b>	
Labourer, Cultivator, Petty trader	163 (81.5)
Mason, Mechanic, Tailor, Driver, Barber	22 (11.0)
Clerk, Overseer, Supervisor, Prison Guard	12 (6.0)
Professional	3 (1.5)
<b>Educational level</b>	
No schooling	12 (6.0)
Primary (Grade 5)	83 (41.5)
Secondary (Grade 6-9)	62 (31.0)
G.C.E. (O.L)	34 (17.0)
HSC (G.C.E.(A.L )	6 (3.0)
Higher Education	3 (1.5)

Figures in brackets denote percentages

most married couples have to face the problem of having undesired children. Moreover, the introduction of the cash incentive payment scheme encouraged the poor to accept the permanent method, and once they had accepted it, they did not have to worry about unwanted children. Furthermore, factors such as low income, poor housing, lack of proper employment and the like, also encouraged the people to accept VSC.

In this study, the monthly income of selected acceptors was recorded and categorised into several income groups. It was found that 8.5 per cent of the acceptors had a monthly income of less than Rs. 300/- and 44 per

cent belonged to the monthly income group of less than Rs. 500/- (Table 4). It was significant that 83 per cent of the acceptors belonged to the income group of less than Rs. 1000/-. However, there is no recent work relating to income distribution within the country, with which the findings of this study can be compared. The only data available are from the Survey of Consumer Finance<sup>10</sup> conducted in 1981/82. A comparison of the data from this survey with the present study does not provide a correct picture, though it does give an idea of the pattern of income distribution and the acceptance of VSC in the country. The Survey of Consumer Finance, reported that the national average monthly income per receiver was Rs. 1111/-; of all income groups, those belonging to the income group of less than Rs. 1000/- constituted 30.94 per cent. It was this group that accounted for around 83 per cent of the acceptors in the Kandy sample. This shows a negative relationship in the acceptance of VSC with higher income. In other words, low income families tended to accept VSC as a method of family planning.

#### *Occupation, Education and Acceptance of VSC*

Comparing the data relating to occupational status of the acceptors with national data from the Survey of Consumer Finance,<sup>10</sup> about 6.01 per cent of employees were found to belong to the professional category. However, among VSC acceptors there were only 1.5 per cent from that category. Moreover, 12.5 per cent of the employees belonged to the white collar job holder group while among the acceptors 7.5 per cent were found to be in that group. On the other hand, the percentage of population engaged in non-white collar jobs, (such as labourers, petty traders, sales workers, agricultural workers, drivers etc.) was 87.8 as compared with 92.5 per cent among the acceptors included in this study (Table 4).

Finally, an analysis of the educational status of the acceptors indicated that 12 of the acceptors had no schooling whatsoever and 83 had primary education. This means that 47.5 per cent of the acceptors had only received primary education or no schooling at all.

There were 96 acceptors with education from grade 6 to grade 10, or with G.C.E.(O.L.) qualifications and only 3 acceptors had received higher education, university education or training in technical institutions.

According to the Survey of Consumer Finance,<sup>10</sup> 20.7 per cent of males had never attended schools and the percentage of males who had only primary education was 40.7 per cent. This data seems to indicate that the illiterate group or the group with no schooling was less encouraged to accept VSC as compared to that with primary and junior secondary education. For instance, the percentage of acceptors who had primary or junior secondary education was 72.5 per cent whereas the percentage of males belonging to

the group with the same education was 67.7 per cent: Furthermore, acceptors belonging to the group who had junior secondary education and G.C.E (O.L.) represented 48 per cent of the sample while the percentage of males belonging to that group according to the Survey of Consumer Finance, was only 35 per cent. It seems that the most significant characteristic of the educational status of the VSC acceptors was that they largely belonged to the junior secondary or G.C.E.(O.L) level (Table 4).

### Summary and Conclusions

Sterilisation as a method of family planning has become increasingly popular in recent years in Sri Lanka. There has been a tremendous increase in the demand for sterilisation after 1980, mainly due to the change in population policy after 1977.

Incentive payments to both acceptors and medical and paramedical personnel have created a considerable impact on the pattern of sterilisation. This hypothesis is further strengthened when we see the total number of acceptors after 1980. Apart from the tremendous increase in the acceptance of sterilisation, there was a remarkable fluctuation in acceptance, with changes in the cash incentive payment scheme.

There was also a structural change in the acceptance of male sterilisation as discussed in the paper. The percentage of male acceptors changed with the introduction of the incentive payments. The number of acceptors also fluctuated with changes in the incentive payment

Several significant socio-economic characteristics of acceptors can also be identified. First, the Sinhalese and Tamils seem more inclined to accept VSC. The percentage acceptance among Tamils was significantly high. On the other hand, Moors were less responsive. The percentage of Moor acceptors was low when compared with their proportion in the population of the district. Secondly, Buddhists and Hindus were more inclined to accept VSC as compared to other religious groups. Thirdly, low income groups were more responsive irrespective of their ethnicity; their acceptance rate was also significantly high. The same argument held true for occupational status because the larger group among the acceptors belonged to the non-white collar job holders. These acceptors belonged largely to the group with junior secondary or G.C.E.(O.L) education. The less educated group and the group with higher education were less attracted to VSC.

From these findings it can be inferred that the sterilisation policy has primarily affected a particular group of people. They are the relatively less educated group, doing non-white collar jobs and belonging to the low income groups.

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# **THE ROLE OF WOMEN IN POPULATION DEVELOPMENT PROGRAMMES AND IN COMMUNICATION**

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## **Background**

To speak of the "Indian Woman" would be an impossibility, without some understanding of the land and its culture.

Geographically a sub-continent, India is not a country in the conventional sense. Its 3,287,782 kms. of land surface straddled by mountains, tablelands, valleys, plains, deserts and forests has a climate that is equally wide-ranging—from blizzards and bitter cold to torrid heat, from an over-abundance of rainfall to none at all, and the monsoon that replenishes the lakes and rivers and serves as the life force of the land.

Within this multi-dimensional setting grew historic India; a tapestry of many races and tribes, many dialects, languages and many forms of worship. In Jawaharlal Nehru's words, the genius of India lay in its capacity for synthesis through a cultural tradition characterised by an overall unity of thought yet resilient enough to accommodate diversity.

From the early texts of religio-philosophic thought extending back to five thousand years, the image of the ideal woman was that of a deity; a goddess in grace, purity, wisdom and primal energy. As the pastoral society gave way to kingdoms and empires, a tightly knit, hierarchical family-structure, with well-defined roles and relationships, evolved within a predominantly agricultural and patrilineal society, that withstood the shock-waves generated by successive invasions.

The concept that woman is by nature inferior and therefore dependant and subservient to man became transformed, as the structure became increasingly stratified due to varying regional, economic, caste, clan and religious considerations.

Derived from a long-distant past when Manu the ancient law-giver had proclaimed, "A woman is never fit for independence; her father must protect her in childhood, her husband in youth, and her sons in old age", the status of woman in Indian society became dichotomous. She became an appendage to man but in her role as mother, she was deified. From this can be traced the high value given to woman's role as mother, in the India of today. India's heterogenous multi-racial, multi-linguistic and multi-religious populace today, is the legacy of many such criss-crossing currents.

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## SITUATION OF WOMAN AND HER PLACE IN SOCIETY

### Demographic Profile

(a) *Sex Ratio*: The sex ratio as the number of females per 1000 males in the population, reflects an interplay between the biological and socio-cultural factors prevailing in a community or nation. As an indicator of the status of women, the almost steady decline in the sex ratio from 1901 to 1971 has been adverse to women and thus a matter of concern to the nation. The modest upward swing from 930 per 1000 males in 1971 to 935 in 1981, gives hope that this trend may have been arrested.

(b) *Life Expectancy*: Within the past four to five decades, expectation of life has doubled. It is inferred that the family planning and MCH programmes are beginning to make some impact on the health status of women. However, general fertility (rural: 137; urban: 104) and the high level of infant mortality (125) remain factors for concern.

(c) *Age at Marriage*: In the rural areas girls are still married at a very young age i.e. 14 to 15 years. In the urban areas, the age at marriage has risen i.e. 16 to 24 years.

(d) *Literacy Rates and Education*: Though there has been a remarkable expansion of women's education in the past two and a half decades (both in absolute terms as well as relative to the educational advancement of men), enrolment of girls at all stages of the school ladder, lags behind that of males.

One out of every three girls in the age group 6-11 remains out of school. The drop-out rate among those who enrolled in Class I, becomes higher as girls near puberty. Very few rural women reach middle school and almost none attain higher education.

### Legal Status

The most commendable feature of the 38 years since India became a Republic, has been the enactment of laws that have struck down barriers obstructing woman's development and status. The civil code governing the majority community, entitles women to equal rights in marriage, the right to property, the right to vote and stand for political office, as well as the right to hold jobs that were considered strictly a male preserve.

Not only did a woman Prime Minister govern the country for over a decade and a half, but women may become pilots; they man top-level administrative and foreign service posts; there are women magistrates, judges and police commissioners; scientists, engineers and technologists; doctors,

nurses, teachers and social workers as well as women in business management, shipping and trade.

The educated and professionally qualified Indian woman in the urban centres has not had to fight for women's liberation in the western sense of the term. However, in terms of relative numbers, the above profile represents a small section of the urban, educated minority of Indian women, who have been the main beneficiaries of development.

### **Socio-cultural Factors**

The interplay of orthodox societal beliefs and taboos and the modern values of human rights and how these are influencing women's role in India's differentiated society, have been examined in detail by the Committee on the Status of Women in India \*

"Positive factors" have been identified as advance in education, opportunities for women's participation in the political process, and welfare measures to counter common disabilities suffered by women. "Negative factors" point to the strong centres of socio-cultural resistance to desired change, in regard to woman's status and roles.

In spite of far-reaching administrative and legal measures to improve their status, the de jure rights conferred on women by the constitution are often impeded by the powerful hold of age-old beliefs and systems that govern matters of every day living. While modernisation and education are bringing about social change, its impact is uneven and often on the surface; even in the more advanced urban areas.

Norms of behaviour that influence the upbringing of children emphasise career motivation for boys, hence there is high value for the education of male children. The education of girls has little value when she is perceived as a transitory member of the natal family, to be 'gifted' to the husband in marriage.

The Indian cinema is a good reflection of conflicting values. Change in dress and recreation is approved. But in people's cultural understanding, the woman's role still remains that of mother and housewife. In this role she continues to be idealised. Gainful employment is perceived by the educated class as man's prerogative and household work as woman's natural domain. It is not surprising then that even when a woman is educated and holds executive office, she does not mind having to give up her job after marriage, due to family pressures. Till very recently, a woman from the wealthier class accepting remunerative employment was considered to have lowered the status of her husband. In reverse, an educated, well-placed woman, from the middle class will herself give up a remunerative job after marriage, in imitation

of the upper classes among whom "leisure" for woman connotes high societal value.

### **Socio-Economic Factors**

Among other disabilities that hinder women's development may be mentioned the process of development itself. When large numbers of workers are displaced as market economy replaces household economy, the dwindling demand for labour hits women the most. In an agricultural economy they constitute almost 50% of the labour force.

Meanwhile rapid population growth undermines all efforts at providing adequate jobs for people seeking employment. In the competition for insufficient jobs, women find themselves a minority twice over. Their condition is aggravated by rigid social mores that hinder girls from looking on education and work outside the home, as 'value'.

As their economic contribution declines with urban-oriented development displacing village economy, the child-bearing and child-rearing role of women is perpetuated. Apart from inadequate personal fulfillment, the nation too is the loser since the productive capacity of almost half of its working population remains un-utilised.

### **WOMEN'S ROLE IN POPULATION DEVELOPMENT PROGRAMME**

In 1952 India became the first country in the world to launch a national, centrally-sponsored family planning programme. From the beginning, family planning was recognised as a vital factor for success in the country's efforts towards planned economic development with social justice.

The purpose of development is to guide the process of transformation in such a way that efficient use is made of all human resources so that the largest number of families obtain an improvement in their level of living. The family planning programme was conceived as a measure that would enhance the quality of life within the family and also serve to accelerate the achievement of socio-economic goals.

The objective of the family planning programme has been to promote family welfare through an informed and voluntary change in individual and social perceptions and behaviour, so that the concept of planned parenthood may be adopted as part of the life style of the people.

A vast network of health service units in hospitals and clinics (from the central, state and district levels down to the primary health centres and sub-centres) provide maternal and child-health care such as immunisation, pre and post-natal services, family planning services etc. An intrinsic part of the total family planning programme is the extensive government machinery

providing information, education and communication services to mobilise public opinion. Information, Education & Communication is fundamental to the persuasion and mobilisation of couples to avail of health and family planning facilities, as well as for the removal of fears and misconceptions.

Since the inception of the family planning programme, the strategy of the Government of India has been to involve large numbers of women in the implementation of the programme. At the Central government level, women are to be found in the topmost policy-making bodies as well as at the managerial executive level.

Women doctors, nurses, para-medicals, education officers provide medical care and IEC services in hospitals and training centres at the Centre and State levels. At the district and block level however, the decision-making function by women is vastly reduced. Fewer women doctors and block-development officers are available due to prevailing educational, socio-cultural and other constraints.

While the provision of health and educational services at the block and village level is technically the task of women who make up the cadre of the Auxiliary Nurse Midwife (ANM), the traditional birth attendant (the dai), and the gram sevika (the village community worker), their clientele and often they themselves are orthodox in upbringing and hence resistant to socio-economic changes.

The strategy of involving voluntary organisations on a large scale to promote family planning as a people's programme provides a unique opportunity to women's organisations to participate in the national developmental task.

### **Women's Organisations**

Gandhiji's call to women to participate as equals in the struggle for independence, brought women particularly from the cloistered upper class into the public arena.

Some of the leading women's organisations were established by educated city women who offered voluntary services to ameliorate the disabilities under which the majority of women and children laboured.

Post-independence women's organisations have continued in this tradition. Meetings have been held, resolutions framed and progressive legislation passed. However, the paternalistic approach which characterised voluntary effort in the pre-independence era, continues among women's organisations, at the village and regional levels in particular. This attitude spills over into motivational work where it concerns family planning and MCH services. The package is "offered" and the recipient is expected to "take it".

The complex interactions between literacy, education, employment, economic status, social relationships within the family which influence a

woman's capacity to take individual 'modern' decisions versus familial 'traditional' decisions must first be perceived by women leaders who are in a position to influence others.

Women workers at the ground level are also hampered from playing a more dynamic role by the fact that due to historical factors, women's organisations of note are urban-based, although several of these have state and district level units and endeavour to work with rural women. The distance between villages, the isolation of thousands of such villages situated in remote areas where no public transport can reach; make their task even more difficult.

To serve the entire country the Government of India through the Central Social Welfare Board (established in 1953-54 and now the Social Welfare Ministry) conceived of a nation-wide scheme of voluntary effort channelised through welfare extension projects for community development, to mobilise urban and rural women to organise themselves through Mahila Mandals or women's associations. These would assemble regularly, learn from one another as well as from workers appointed by the government basically to improve their own status as wife and mother and to take part in public affairs. Over 66,000 Mahila Mandals aided by government grants have been established to date, but performance has remained below expectation except in pockets where their role has been commendable.

Though the Mahila Mandals were formed to tap voluntary effort so as to nurture woman power for development within the communities they worked, the majority of Mandal members (in north India in particular) lacked education as well as a proper understanding of their own role as catalysts nor did they have organised and systematic training for this complex task.

While the Mahila Mandals have undertaken a number of developmental activities such as running anganwadis (village creches) and balwadis (nursery schools) or providing health and nutrition education, or skills training for the economic uplift of rural women, it is handled in piece-meal fashion and generally limited to the immediate task at hand. Thus a great deal of overlap and an insufficient awareness of linkages has interfered with the effectiveness of their endeavour.

### **Professional Associations of Women**

A large number of professional associations of women are engaged in some type of welfare work among women and children as a 'social service'. Some of these organisations are in the nature of trade unions concerned with the betterment of service conditions. As a group however, they have not undertaken campaigns to mobilise women in general to an awareness of their own potential and role in development.

Associations of women trade union workers, women lawyers, social workers, political workers have combined on occasion to serve as pressure

groups and have in such cases been successful in securing enactment of social laws affecting women and children.

#### ROLE OF WOMEN IN COMMUNICATION

The role of women in communication has been extensive. Traditionally in their role as mothers, women have been the chief communicators in regard to family patterns of living, relationship and duties in the family and the transmission of cultural beliefs and practices.

Contemporary forces that constrain women's development are chiefly socio-cultural and economic. In traditional homes it is the rigid family mores and values that sustain illiteracy and ignorance as is the case with girls in rural areas.

It is in this context that the role of women in communication assumes significance. Though mass communication is of recent origin, the employment of women has been very encouraging, due initially to the Public Communication Services of the government, which gave a fillip to their enrolment in their field.

The number of women free-lance writers, feature writers, news reporters, music critics and book reviewers has increased phenomenally in the past decade and a half, though women editors are comparatively few. Similarly, a large contingent of women news-readers, announcers, feature and script writers are to be found in the national and regional radio and television network. (India has 84 radio stations reaching 90% of the country's population).

The tendency that persists is to assign women to the coverage of topics related to home and children, fashion and beauty care. However, a small but welcome beginning has been made by documentary producers, editors and others to tackle fundamental population-related issues in a realistic and unambiguous manner.

Radio, television and films represent powerful means of social communication supervening barriers of time and distance.

Women's organisations and professional associations need to form a strong lobby to influence policy makers to utilise the media not only for popular entertainment but also to generate a scientific outlook, to change age-old attitudes that hinder progress and to provide emotional support to the acceptance of new ways of thinking and working for modern nation building.

With the commissioning of the national hook-up on radio and television, women planners and communicators have a singular opportunity to vitalise the nation-wide population programme. They can do a great deal to remove psychological fears and correct the view that family planning is strictly a birth control measure. The many dimensions of the family welfare programme, including mother and child health care, need to be presented forcefully yet

psychologically through innovative approaches, such as those used in the Gyanadeep programme in Bombay which has activated community participation.

Systematic planning and organisation of national development programmes with focus on population-related factors is essential, so that a flow of planned inputs and feedback—to and from the ground level to the national level—is established. (This is equally important when less sophisticated media are to be used).

The range of content which has largely focussed on health, education and home science should be widened to include information and understanding of population policies, the inter-actions between quality of life, population growth, environment, women's employment, the nation's efforts at planned development etc.

A stronger coverage of social issues such as dowry, female education and employment, awareness of women's many-sided roles in a modern society and in fact that they constitute half the population of the country, could contribute to their self-image and self worth, all of which have received little attention in IEC programmes undertaken by different welfare agencies as well as by the mass media.

For long-term educational courses IEC programme planners must know the literacy level of the women they seek to reach, their taboos, beliefs, customs and traditional ways of handling daily-life problems.

Similarly a study should be undertaken to assess community preferences regarding channels of communication e.g. kirtans and bhajans (religious group singing), folk drama, radio, television, cinema posters, pamphlets and other media.

To conclude, it is essential to utilise every channel of communication to generate in women at all levels, a feeling that they are truly a part of the different welfare programmes undertaken; that development is both *for* them and *by* them. The 'cosmetic-effect' programme of talks and lectures will no longer carry weight. Urban and rural women need to be woken out of their apathy. The former, to share the benefits of development which they have largely garnered, by aiding the latter to examine the fears, taboos, and superstitions which inhibit the progress of the entire nation.

In this task, a vast army of women with sound orientation and training, utilising every type of inter-personal communication and mass media is needed to eliminate illiteracy and ignorance on a war footing. Only when women release their hitherto suppressed potential can the nation's developmental tasks be fulfilled.

**"When you educate a man you educate an individual  
When you educate a woman you educate the whole family."**



# **A PROFILE OF ACCEPTORS OF TERMINAL METHODS OF FAMILY PLANNING IN A RURAL COMMUNITY**

**DR. B.D. VERMA+ and MR. A.K. SINGLA++**

## **Introduction**

The Guru Cooperative Milk Producers' Union Ltd. in Bathinda district of Punjab state, works as a voluntary health organisation and operates a rural health project in the villages of Bathinda. The project which is financed by a grant-in-aid from the Ministry of Health and Family Welfare of the Government of India, and the Guru Milk Union itself, aims to provide basic health services with particular emphasis on MCH and family planning through spacing methods, at the doorstep of the community. This paper presents the results of a baseline sample survey conducted as a part of the project. The findings, which bring to light interesting information on the profile of acceptors of terminal methods of family planning in the rural community, have direct relevance to the policies pursued by the national family welfare programme.

## **Methodology**

In Bathinda district there are 386 villages which have formed Milk Producers' Cooperative Societies (MPCS). Of these, 152 MPCS send their milk directly to the Milk Plant at Bathinda. The present survey covered these 152 villages through a multi-stage sampling procedure. In the first stage, 31 villages were selected using Fisher's random number tables. In the second stage, a list of households in each of these villages was obtained from the village Sarpanch or depot holder. The names on this list were serially numbered, and by the systematic sampling procedure, every fourth house in the list was selected for inclusion in the sample. The serial number of the first house to be included was determined by drawing lots from numbers 1 to 4. In this manner, a total of 2,958 households spread over 31 villages were surveyed.

Two proforma, one for a baseline survey and the other for currently married women as recommended by Talwar<sup>1</sup> were used. Three qualified auxiliary nurse midwives were trained and employed for data collection. The field work lasted from the middle of December 1986 up to the first week of March 1987.

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## Results

### *Overall Picture*

There were 2,491 eligible couples in the sample. This comprised 14.9 per cent of the total population. Of these, 73 were cases of primary sterility; and 27 and 762 had accepted vasectomy and tubectomy respectively.

Table 1 shows a spurt in the number of operations in 1975 and a sustained increase from 1978 onwards with a peak in 1984. It also shows the predominant acceptance of female sterilisation as compared to male sterilisation.

**TABLE 1**  
**Number of sterilisation acceptors, 1970-1987**

Year	No of acceptors of		Total acceptors
	Vasectomy	Tubectomy	
Jan-Feb 1987	0	13	13
1986	2	84	86
1985	1	78	79
1984	3	112	115
1983	1	73	74
1982	2	83	85
1981	1	59	60
1980	3	61	64
1979	5	38	43
1978	4	57	61
1977	1	14	15
1976	2	17	19
1975	0	36	36
1974	0	11	11
1973	0	6	6
1972	0	10	10
1971	0	5	5
1970 & earlier	2	5	7
<b>Total</b>	<b>27</b>	<b>762</b>	<b>789</b>

Only 16.3 per cent of the acceptors had adopted sterilisation after two live born children, while more than 51 per cent had undergone the operation after the birth of four or more children (Table 2). The average number of live born children was 3.72.

At the time of the operation, over 41 per cent of the women were aged 30 years or above; only 12.5 per cent were below the age of 25 years. The mean age at the time of operation was 29.47 years (Table 2).

TABLE 2

**Frequency distribution of 789 acceptor couples by number of live born children and wife's age at time of operation**

No. of acceptor couples	
<i>No. of live born children *</i>	
2	129 (16.3)
3	255 (32.3)
4	220 (27.9)
5	117 (14.8)
6	40 (5.1)
7	21 (2.7)
8	4 (0.5)
9	1 (0.1)
10	2 (0.3)
Total	789 (100.0)
<i>Age of wife at time of operation (years)**</i>	
20-24	99 (12.5)
25-29	362 (45.9)
30-34	248 (31.4)
35-39	78 (9.9)
40-44	2 (0.3)
Total	789 (100.0)

\* Mean = 3.72; S D =  $\pm 1.25$

\*\* Mean = 29.47, SD =  $\pm 0.84$

Figures in brackets represent percentages.

### ***Temporal Changes***

Available data were regrouped to bring out changes in the profiles of the acceptors during the biennia 1975-1976, 1980-1981 and 1985-1986. These are presented in Table 3.

Three parameters were studied; namely, the number of live born children; the wife's age at the time of operation, and the duration of marriage at that time.

Table 3 shows that the average number of live born children increased from 3.53 during the biennium 1975-76 to 3.61 during 1980-1981, and to a still higher level of 3.87 during 1985-1986. The differences, however, were statistically insignificant ( $z = 1.86$ ). The proportion of couples accepting

TABLE 3

Comparative profile of acceptors during the biennium 1985-1986, 1980-1981 and 1975-1976 by number of live born children and wife's age and duration of marriage at the time of operation

	No. of acceptor couples during the biennium					
	1985 & 1986		1980 & 1981		1975 & 1976	
	Actual No.	% of total	Actual No.	% of total	Actual No.	% of total
<i>No. of live born children</i>						
2	27	16.4	24	19.4	9	16.3
3	46	27.9	42	33.9	20	36.4
4	47	28.5	28	22.6	16	29.1
5	26	15.7	21	16.9	9	16.4
6	12	7.3	6	4.8	0	—
7	3	1.8	3	2.4	1	1.8
8	2	1.2	0	—	0	—
9	0	—	0	—	0	—
10	2	1.2	0	—	0.	—
Total	165	100.0	124	100.0	55	100.0
Mean number of children per couple	3.87		3.61		3.53	
SD (±)	1.51		1.25		1.07	
<i>Wife's age at time of operation (years)</i>						
20-24	18	10.9	23	18.5	5	9.1
25-29	77	46.7	49	39.5	44	80.0
30-34	38	23.0	45	36.3	6	10.9
35-39	31	18.8	7	5.7	0	—
40-44	1	0.5	0	—	0	—
Mean age	30.08		28.95		27.59	
SD (±)	0.94		0.83		0.45	
<i>Duration of marriage at time of operation (years)</i>						
<9	56	33.9	43	34.7	24	43.6
9-10	31	18.8	38	30.6	18	32.7
11-12	20	12.1	19	15.3	9	16.4
13-14	22	13.3	11	8.9	3	5.5
15-16	16	9.7	10	8.1	1	1.8
17-18	11	6.7	2	1.6	0	—
19-20	9	5.5	1	0.8	0	—
21+	0	—	0	—	0	—
Total	165	100.0	124	100.0	55	100.0
Mean duration of marriage	11.08		9.97		8.91	
SD (±)	2.25		1.76		1.42	

sterilisation after three or fewer children was 52.7 per cent during 1975-1976. It declined to 44.3 per cent during 1985-1986. The difference was not statistically significant ( $P > 0.50$ ).

The mean age of the wife at the time of operation registered a sustained upward trend with the passage of time. It was 27.59 years during 1975-1976, 28.95 during 1980-1981 and 30.08 years during 1985-1986 (Table 3). The difference was highly significant ( $z = 26.16$ ). The mean age at marriage of the women had also increased over this period, though this increase was very small and insignificant: 18.68 years in 1975-1976, 18.98 years in 1980-1981 and 19.00 years in 1985-1986. The proportion of wives less than 30 years of age at the time of operation was 89.1 per cent during 1975-1976: it fell precipitately to 58.0 per cent during 1980-1981 and was 57.6 per cent during the biennium 1985-1986. The decline was very highly significant ( $p < 0.001$ ).

The mean duration of marriage at the time of operation also showed a steady upward trend with the passage of time. It was 8.91 years during 1975-1976, 9.97 during 1980-1981 and 11.08 years during 1985-1986 (Table 3). The differences were significant ( $z = 8.35$ ). The proportion of couples with less than nine years' duration of marriage at the time of operation declined from 43.6 per cent in 1975-1976 to 34.7 per cent in 1981-1982 and to 33.9 per cent in 1985-1986. However, the differences were not statistically significant ( $p > 0.50$ ).

#### *Live Born Children of Acceptors Vs. Non-acceptors*

Table 4 reveals that towards the end of the reproductive span of the female, taken here as the age of 38 years and above, the average number of live born children per couple was higher among acceptors than non-acceptors: 4.23 and 3.97 respectively. However, the difference was not statistically significant ( $p > 0.10$ ).

TABLE 4

**Comparative number of live born children to acceptors and non-acceptors of terminal methods (wife's age group of 38 years and above)**

	Acceptors	Non-acceptors
Number of eligible couples (E.Cs.)	242	149
Number of live born children to these eligible couples	1023	592
Mean number of live born children per eligible couple	4.23	3.97

## Discussion

In 1953, the Government of India was the first government in the world to adopt family planning as a national policy <sup>2</sup>. Thirty one years later, the International Conference on Population<sup>3</sup> held in Mexico City in August 1984 showed that 127 governments were supporting fertility control.

The goal of India's national family welfare programme is to slow the fertility rate to achieve a Net Reproduction Rate of 1.0 by the year 2000 A.D.<sup>4</sup>. For this purpose, targets for the Seventh Plan period have been set at 31 million sterilisations and 21.25 million IUD insertions.<sup>4</sup> The government reinforces its fertility control policy with the offer of financial incentives to acceptors.

The present study reveals a marked quantitative progress achieved between the biennia 1975-1976 and 1985-1986; the number of acceptors had increased three-fold. A scrutiny of the qualitative aspect, however, brings to light a disturbing picture. The findings, considered collectively or individually, indicate the following:

- (a) Sterilisation operations are being accepted much later in life than would effectively bring down fertility; the mean number of live born children per acceptor couple was 3.72
- (b) All parameters show the development of unfavourable trends between the biennia 1975-1976 and 1985-1986. The mean number of live born children per couple showed an increase and the proportion of couples accepting sterilisation after the birth of three or fewer children decreased. The mean age of the wife at the time of operation also rose. While the proportion of wives below thirty years of age at the time of operation went down, the mean duration of marriage at that time went up; the proportion of couples who had been married for less than nine years at the time of operation also decreased.
- (c) Lastly, towards the end of the wife's reproductive period, the average number of live born children to acceptors was higher than to non-acceptors.

On the basis of a qualitative assessment, one has to infer that something is amiss in the implementation of the programme: there are far too many sterilisation operations (51.4 per cent in this study) which fail to serve the objective of the programme. This study did not attempt to elicit information regarding the motivational factors leading to the acceptance of the terminal method. However, other surveys<sup>5, 6</sup> have indicated that the majority of couples who have adopted sterilisation, have done so only after they have achieved the desired size and sex composition of their families.

Sharma<sup>7</sup> is of the opinion that couples opt for the sterilisation operation

not out of informed choice, but are merely driven to it because they cannot control their fertility by the use of conventional contraceptives, and at the same time, cannot bear the burden of a further increase in the size of their families.

We feel that in addition to these factors, the financial incentives offered by the government also play a significant role. This is borne out by a front page-news item published in the national daily, the Indian Express.<sup>8</sup> In our view, the current policy of indiscriminate payment of incentive money at a uniform rate to all acceptors, irrespective of the number of children after which they opt for the operation, is the prime factor which generates a demand for such infructuous sterilisations. The doctor may be completely convinced about the uselessness of the requested/demanded operation from a national or even the family point of view, but he cannot withhold it. Nor has he any discretion to be selective or elective. On the contrary, the pressure of fulfilling his allotted target, and possibly the lure of reward and recognition for over-shooting the target is so great that he cannot afford to pay heed to biological or ethical considerations; all he is concerned with is the game of numbers.

The need to eliminate infructuous sterilisations is obvious. This can be achieved by changing the policy regarding incentive money. Couples accepting sterilisation after the birth of one or two children may be offered Rs. 1000 and Rs. 250 respectively or any other graded but attractive scale. Incentives to other acceptors should be altogether stopped. With a current population of 775 million, of which 40 per cent is below the age of 15 years, India's growth potential is very high. Therefore, the need for stabilising the population at as low a level as possible, has become very urgent. The stage has been reached when we should aim at only one child per family as advocated by Mittal<sup>9</sup>.

The second step would be to do away with the system of setting targets. It has to be recognised that compulsion and coercion are in-built elements of target setting; these are strongly inhibitory and counter-productive. Moreover, as this study suggests, targets may be achieved to a large extent but not necessarily the objectives. The average number of live born children to sterilisation acceptors was higher than to non-acceptors; therefore, the contribution of the former to a lowering of the birth rate cannot be more than marginal.

Lastly, we are fully aware that this is a small series in comparison to the vast dimensions of the national family welfare programme spanning the whole country, and its findings cannot form the basis for generalisation. Nevertheless, these findings strongly point to the necessity of undertaking a similar qualitative evaluation of the programme in other districts and states.

## Summary and Conclusion

This is a study of the acceptors of terminal methods of family limitation among the rural population of District Bathinda, Punjab. Over a twelve-year period between the biennium 1975-1976 and 1985-1986, the number of acceptors increased three-fold; but their profile showed the development of unfavourable trends. A majority of the cases accepted the operation much later in their married life to have been effective in reducing fertility, and thus failed to serve the objective of the national family welfare programme. Hence, suggestions have been made to eliminate such infructuous sterilisations. Considering the present size of the country's population and its high growth potential, a plea is made for propagating one-child families.

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# **POST-PARTUM AMENORRHOEA IN BANGLADESH : DURATION AND DIFFERENTIALS**

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**and**

**DR. M. MOSLEHUDDIN\*\***

## **Introduction**

It is well recognised that lactation lengthens the period of post-partum amenorrhoea<sup>1</sup> and is the most important factor affecting the timing of the return of menses. Since fertility is greatly reduced, though not eliminated, during the period of amenorrhoea, it follows that other factors being equal, a change in breast-feeding habits could affect population dynamics<sup>2</sup>. Recent studies in developing countries indicate that with an increase in the level of education, and greater urbanisation and industrialisation, the duration and prevalence of breast-feeding is decreasing.<sup>3-5</sup>

The post-partum non-susceptible period varies considerably, not only among individuals, but between different populations or population sub-groups. It is more or less coincident with the period of post-partum amenorrhoea and is believed to be primarily determined by the duration and intensity of breast-feeding. Moreover, the length of the post-partum non-susceptible period determines how soon after delivery a woman is at risk of conception, and hence in need of contraception, if she wishes to delay or prevent the next pregnancy.<sup>6</sup> Consequently, reliable information on the duration of the post-partum non-susceptible period is of considerable importance to family planning programmes.

The main aim of this paper therefore is to estimate the duration of post-partum amenorrhoea. Differentials in the estimates have been discussed in terms of selected socio-demographic characteristics.

## **Data and methodology**

Data for this study were derived from the 1975 Bangladesh Fertility Survey (BFS) which was conducted as a part of the World Fertility Survey (WFS). Information collected for the WFS, makes it possible to indirectly estimate the duration of post-partum amenorrhoea and thus the period of post-partum non-susceptibility. While the periods of post-partum amenorrhoea

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and non-susceptibility are not strictly identical, they tend to be quite similar. Since ovulation generally precedes menstruation by two weeks, the period of non-susceptibility would end two weeks prior to the resumption of menstruation or when menstruation would have resumed.

The present study uses the prevalence incidence ratio technique for measuring the duration of post-partum amenorrhoea. This technique, long used by epidemiologists has, in recent years, been applied by demographers to estimate average post-partum durations when their retrospective reporting is suspected to be unreliable<sup>7 8</sup>.

The method assumes that the number of births per month preceding the survey has been roughly constant. Thus, if 'W' is the prevalence of a particular status, 'W' will be equivalent to the total number of women who were in the status of post-partum amenorrhoea at the time of interview. 'K', the incidence of births, is equivalent to the number of women entering a particular status, and can be calculated from the number of births in the year preceding the survey, or from the number of births during two, three or four years preceding the date of interview. Then, the prevalence incidence mean 'D' can be defined as  $D = W/K$ . The numerator of the technique does not require any information on dates whereas the denominator requires the dates of birth of children. Any misreporting of the birth of children will affect the estimate only if the misreporting transfers births across the boundary of the period chosen.<sup>8</sup> Any period which minimises the telescoping of events can be used. Estimates based on the number of births occurring in the last 12 months showed that there was a tendency to telescope events occurring in the distant past into the 12-month period. It was also found that a duration of two or three years did not give an adequate number of births for the older women, as a four-year period.

Information on demographic and socio-economic variables which are expected to affect the duration of post-partum amenorrhoea was also collected. Over a longer period, the effect of these variables might have been different. It is assumed that within the four-year period there would not have been any major change in these variables. A four-year period also reduces memory bias and heaping.

### **Limitations of the Technique**

The assumption of a constant flow of births might be incorrect for the youngest and the oldest women, leading to an overestimate of the prevalence incidence mean for the youngest and an underestimate for the oldest women. The technique does not take into account multiple births for which the mother is still in an amenorrhoeic condition, and which might have an effect on the duration of post-partum amenorrhoea. The use of events in the open interval may lead to some overestimates of durations. However, there is no reason

why this bias should be different for different sub-groups; women with long durations of post-partum amenorrhoea are likely to be located in the open interval than in the closed interval.

## Results

### *Mean Duration of Post-partum Amenorrhoea*

The prevalence incidence technique provides a simple method for estimating the mean duration of post-partum amenorrhoea. The mean is computed simply by dividing the number of women currently amenorrhoeic by the average number of births. Implicit in this technique is the assumption of stability in post-partum amenorrhoea duration and the annual flow of births over the recent past.

Table 1 presents the duration of post-partum amenorrhoea by age of the respondents and the total number of births included in the analysis. It was observed that the mean duration of post-partum amenorrhoea in Bangladesh was 16.0 months. Kabir<sup>9</sup> estimated a median duration of post-partum amenorrhoea of 16.5 months for Bangladesh whereas, Chen et al<sup>10</sup> found that the median length of amenorrhoea for a rural Bangladeshi woman with a surviving breast-fed child was about 17 months.

TABLE 1

Mean duration of post-partum amenorrhoea following live births in the last four years by current age of mother

Age group (years)	Post-partum amenorrhoea (months)	Total births in last four years
15-19	16.7	854
20-24	15.3	1523
25-29	14.6	1222
30-34	16.2	687
35-39	17.9	438
40-44	16.6	217
45-49	28.5	59
15-49	16.0	4998

The estimated mean duration of post-partum amenorrhoea varied between 14.6 and 28.5 months (Table 1). It was found to remain fairly constant with age, the only increase being in the 45-49 age group; the very big increase in this group was almost certainly due to women who had reached

the menopause. In rural Bangladesh, Chen et al<sup>10</sup> found that women aged 29 years or less had a significantly shorter mean duration of post-partum amenorrhoea than their older counterparts (16.4 as compared with 23.2 months).

### *Differentials by Socio-demographic Characteristics*

Table 2 shows the average duration of post-partum amenorrhoea by some selected socio-demographic characteristics. A major change in the mean duration of post-partum amenorrhoea was obscured following births to women after parity eight to nine. For instance, the average duration of post-partum amenorrhoea of women with ten or more children was only 11.5 months as compared to 16.8 and 17.6 months for women with eight to nine and six to seven children respectively. In a Taiwan study, Jain et al<sup>11</sup> found that the period of amenorrhoea increased monotonically with increasing parity. This suggests that data for this study might have been affected by errors and the real estimate has been obscured by this error.

**TABLE 2**  
**Mean duration of post-partum amenorrhoea by**  
**selected socio-demographic characteristics**

Characteristics	Post-partum amenorrhoea (months)	Total live births in last four years
<i>Parity</i>		
1-3	16.0	2177
4-5	15.3	1265
6-7	17.6	816
8-9	16.8	477
10+	11.5	277
<i>Place of residence</i>		
Currently rural		
Grown up in rural	16.4	4492
Grown up in urban	13.0	92
Currently urban		
Grown up in rural	13.8	282
Grown up in urban	8.1	149
<i>Current residence</i>		
Rural	16.3	4586
Urban	11.8	241
<i>Education</i>		
No education	16.9	3684
1-4 years	14.0	1020
5 years and above	10.5	273

Table 2 also suggests that in all the instances, women with a rural background experienced a higher duration of post-partum amenorrhoea than their urban counterparts. For example, the average duration of post-partum amenorrhoea of rural-reared women who were currently urban residents was 13.8 months as against 8.1 months for the urban-reared urban women. The average duration of post-partum amenorrhoea of urban women was about 3.5 months shorter than that of rural women. Knodel et al<sup>1</sup> have also observed that the return of menstruation was delayed in rural Thai women.

As expected, there was a distinct differential in the average duration of post-partum amenorrhoea by educational level. The average duration of post-partum amenorrhoea ranged from 10.5 months for women with more than five years of education to 16.9 months for those with no education. Similar differentials by educational attainment have been reported by Gaisie,<sup>12</sup> and could be attributed to differences in the average duration of breast-feeding. There is evidence that the average duration of breast-feeding among rural women is considerably longer than among their urban counterparts. While precise knowledge of the determinants of the relationship between breast-feeding and post-partum amenorrhoea is still lacking, there is considerable evidence that one important influence is the type of feeding followed. In particular, the impact of breast-feeding on prolonging post-partum amenorrhoea is greater for mothers who exclusively breast-feed than for those who follow a mixed feeding pattern.<sup>11</sup> The fact that there is a greater rural urban difference in breast-feeding duration than in the length of post-partum amenorrhoea in Bangladesh can probably be attributed, at least in part, to the introduction of supplementary foods by urban women.

TABLE 3

Mean duration of post-partum amenorrhoea by education of husband and wife

Husband's education	Wife's education		Total births in last four years	
	Uneducated	Educated	Uneducated	Educated
Uneducated	17.2	14.3	3758	37
Educated	13.1	10.1	902	234
All	16.3	10.5	4724	271

Classifying by education of husband and wife, the mean duration of post-partum amenorrhoea of educated women with educated husbands was observed to be about three months shorter than that of uneducated women with educated husbands (Table 3). This suggests that the woman's education is more effective in causing variations in the duration of post-partum amenorrhoea than

the husband's education. However, it is difficult to conclude that women's education per se is responsible for these variations in post-partum amenorrhoea — various other factors such as urban-rural background, access to modern contraception and women's nutritional status might also interact with education to cause variations in the duration of post-partum amenorrhoea.

### Discussion and Conclusion

Data collected in the 1975 Bangladesh Fertility Survey on how long ago a woman experienced her last menstruation or on how soon following birth menstruation returned, appear to yield reasonable estimates of the duration of postpartum amenorrhoea. They provide important information on the non-susceptible period following a birth, an important proximate determinant of fertility for which little previous data are available. In the present analysis, the mean duration of post-partum amenorrhoea was 16.0 months. The duration of post-partum amenorrhoea was shorter for urban women than for rural women and decreased with increasing educational level.

The prevalence incidence technique suffers from fewer problems since it utilises a larger proportion of the sample for the estimation of the average duration of post-partum amenorrhoea. The results suggest a variation in the average duration of post-partum amenorrhoea by socio-economic background of the respondents. However, more direct estimates are necessary to add important information to our understanding of the proximate determinants of fertility.

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# **PROXIMATE DETERMINANTS OF FERTILITY DECLINE IN BIHAR DURING 1971-81**

**MR. SURESH RAI<sup>+</sup>**

## **Introduction**

The state of Bihar is located in the eastern region of India. Bihar is the second most populous state of the country and ranks eighth in terms of area. According to the 1981 census, Bihar has a population of about 70 million and a population density of 402 per square km. Since 1931, the growth rate of the state has never exceeded the national growth rate even though its population has been continuously increasing.

A comparison of age distribution over the decades also indicates a decline in fertility<sup>1</sup>. It is known that a high level of per capita income, rapid economic growth, a high urban population, increase in female literacy and employment, higher age at marriage, low levels of infant mortality and wider use of contraception among couples, contribute to a decline in fertility. This is not true in the case of Bihar. This state presents a low per capita income, poor economic growth, low levels of urbanisation, female literacy, employment, age at marriage, use of contraception and a high level of infant mortality. It could be said that social and cultural variables have played a greater role than economic factors in bringing down the fertility of the state.

The mechanism through which various cultural factors affect fertility has been of interest to many researchers. The framework of Davis and Blake<sup>2</sup> consists of eleven —intermediate fertility variables— which can have a negative or a positive effect on fertility. This framework also identifies the mechanism through which socio-economic processes and human behaviour interact with the biological aspect of human reproduction. The biological and behavioural dimensions of fertility are linked through a set of 'proximate' determinants or 'intermediate fertility variables'. The proximate determinants of fertility are the biological and behavioural factors through which social, economic and environmental variables affect fertility. More recently, Bongaarts<sup>3</sup> has identified seven variables which ultimately depend on four proximate variables, namely, marriage, contraception, abortion and lactational infecundability. He has proposed an aggregate model to ascertain the decline in the fertility level of a population caused by these proximate variables.

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This model may be useful in explaining the causes of fertility decline in Bihar during the last one decade or so.

### Objectives

The main objective of this paper was to study the fertility change in the state of Bihar during 1971-81 and assess the contribution of each proximate variable in the process of fertility change through the decomposition of the total fertility rate (TFR) into their proximate components as proposed by Bongaarts<sup>1</sup>

### Data

The required estimates of fertility indicators for the 1970s were obtained from the fertility surveys conducted by the Office of the Registrar General — the Sample Registration System<sup>4</sup>, the 1981 census report, and the Registrar General's Report, 1981<sup>5</sup> for a 5 per cent sample. For the purpose of the study, two periods — 1971 and 1981 were considered. The total fertility rate of 1971 was adjusted with the help of the estimated total fertility rate (1972) using an adjustment factor:  $\frac{\text{CBR in 1971}}{\text{CBR in 1972}}$

$$\begin{aligned} \text{Adjusted TFR}^{(1971)} &= \text{Estimated TFR}^{(1972)} \times \frac{\text{CBR}^{(1971)}}{\text{CBR}^{(1972)}} \\ &= 4.97 \times \frac{41.9}{33.1} = 6.3 \end{aligned}$$

$$\begin{aligned} \text{Adjusted TMFR}^{(1971)} &= \text{Estimated TMFR}^{(1972)} \times \frac{\text{CBR}^{(1971)}}{\text{CBR}^{(1972)}} \\ &= 5.39 \times \frac{41.9}{33.1} = 6.8 \end{aligned}$$

Data regarding couple protection (sterilisation, IUD and other methods) and induced abortion for 1980-81 were obtained from the Family Welfare Year Book 1980-81<sup>6</sup>. Information on the duration of lactational infecundability was taken from a baseline survey of fertility and mortality in Bihar.

### Methodology

The aggregate model of Bongaarts<sup>3</sup>, links TFR to the fertility inhibiting effects of the four principle variables—marriage, contraception, induced abortion and post-partum infecundability measured respectively by the indices Cm, Cc, Ca, Ci respectively. In the formulation of the model, the total fer-

tility rate of a population (TFR) is expressed as the product of the four indices measuring the fertility inhibiting effects of these four factors and the total fecundity rate (TF).

According to Bongaarts, we have

$$TFR = C_m \times C_c \times C_a \times C_i \times TF \dots\dots\dots (1)$$

where

$$\begin{aligned} C_m &= 1, \text{ if all women of reproductive ages are married.} \\ &= 0, \text{ if there is no marriage.} \\ C_c &= 1, \text{ if there is no contraception.} \\ &= 0, \text{ if all fecund women use 100\% effective contraception.} \\ C_a &= 1, \text{ if there is no induced abortion.} \\ &= 0, \text{ if all pregnancies are aborted.} \\ C_i &= 1, \text{ if there is no lactation.} \\ &= 0, \text{ if the duration of infecundability is infinite.} \end{aligned}$$

This decomposition ascertains the trend in TFR by estimating the corresponding simultaneous trends for four indices at two points of time say  $t_1$  and  $t_2$  as follows:

$$\frac{TFR(t_2)}{TFR(t_1)} = \frac{C_m(t_2)}{C_m(t_1)} \times \frac{C_c(t_2)}{C_c(t_1)} \times \frac{C_a(t_2)}{C_a(t_1)} \times \frac{C_i(t_2)}{C_i(t_1)} \times \frac{TF(t_2)}{TF(t_1)} \dots(2)$$

The total fecundity rate of a population is largely a function of biological proximate determinants: frequency of intercourse, natural sterility, and spontaneous intrauterine mortality. We assume that no significant changes have occurred in any of these factors in Bihar between 1971 and 1981, although minor variations can be expected. It is, therefore, reasonable to assume TF to have remained constant during this period i.e.  $TF(t_1) = TF(t_2) = TF$ . With this statement, equation (2) becomes

$$\frac{TFR(t_2)}{TFR(t_1)} = \frac{C_m(t_2)}{C_m(t_1)} \times \frac{C_c(t_2)}{C_c(t_1)} \times \frac{C_a(t_2)}{C_a(t_1)} \times \frac{C_i(t_2)}{C_i(t_1)} \dots\dots (3)$$

where the values of the four indices are estimated from the available information at points of time  $t_1$  and  $t_2$ , using the equations given below:

$$C_m (\text{Index of proportion married}) = \frac{\sum m(a) q(a)}{\sum g(a)} \text{ or } \frac{TFR}{TMFR} \dots\dots (4)$$

where  $m(a)$  = age specific proportions currently married among females  
 $g(a)$  = age specific marital fertility rate

$$Cc \text{ (Index of contraception)} = 1 - u \cdot e \quad (5)$$

where  $u$  = proportion currently using contraception among married women of reproductive age

$e$  = effectiveness of contraception

$$Ca \text{ (Index of induced abortion)} = \frac{TFR}{TFR + .4(1+u) \times TA} \quad (6)$$

$$Ci \text{ (Index of lactational infecundability)} = \frac{20}{18.5 + i} \quad (7)$$

where  $i$  = average duration of post-partum infecundability caused by breast-feeding or post-partum abstinence and can be estimated as from the following relation:

$$i = 1.75 \exp(0.1396 \times B - 0.001872 \times B^2) \quad (8)$$

where  $B$  = mean or median duration of breast-feeding in months.

TF, the total fecundity rate, is the average number of live births expected among women who, during their entire reproductive period, remain married, do not use contraception, do not have any induced abortion and do not breast-feed their children.

Equation (2) can be written as:

$$Pf = Pm + Pc + Pa + Pi + Pr + I \quad (9)$$

where

$$Pf = \frac{TFR(t_2) - TFR(t_1)}{TFR(t_1)} \quad (10)$$

= proportional change in TFR between  $t_1$  and  $t_2$  points of time (years).

$$Pm = \frac{Cm(t_2) - Cm(t_1)}{Cm(t_1)} \quad (11)$$

= proportional change in TFR due to a change in the index of marriage during  $t_1$  and  $t_2$  years.

$$Pc = \frac{Cc(t_2) - Cc(t_1)}{Cc(t_1)} \quad (12)$$

= proportional change in TFR due to a change in the index of contraception during  $t_1$  and  $t_2$  years.

$$Pa = \frac{Ca(t_2) - Ca(t_1)}{Ca(t_1)} \quad (13)$$

= proportional change in TFR due to a change in the index of induced abortion during  $t_1$  and  $t_2$  years.

$$P_i = \frac{C_i(t_2) - C_i(t_1)}{C_i(t_1)} \dots\dots\dots (14)$$

= proportional change in TFR due to a change in the index of post-partum infecundability during  $t_1$  and  $t_2$  years.

$$P_r = \frac{TF(t_2) - TF(t_1)}{TF(t_1)} \dots\dots\dots (15)$$

= proportional change in TFR due to a change in the remaining proximate variables — natural fecundability, spontaneous intrauterine mortality and permanent sterility during  $t_1$  and  $t_2$  years.

If  $TF(t_1) = TF(t_2)$ ,  $P_r = 0$  and  $I$  = interaction factor

## Results and Discussion

### *Quantification of the Proximate Determinants of Fertility*

The fertility inhibiting effects of the four above-mentioned indices of fertility in Bihar were determined at two points of time - 1971 and 1981 - using the mathematical equations 1 to 15 given above. The analysis utilised the available information on these indices and their ultimate approximations.

### *Index of Proportion Married (Cm)*

This index was obtained from TFR and TMFR through equation (4) above. For the years 1971 and 1981, the value of this index was computed as 0.926 and 0.905 respectively. These results indicate a TFR decline of 2.27 per cent in the index during 1971-81.

The incidence of widowhood seemed to be on the decline in the state, evidence of which was given by an increase in the proportion of women currently married in the ages 25 and above, during 1971-81 (1981 census report). A comparison of the 1971 and 1981 census figures showed a sharp drop (over 10 per cent) in the percentage of women currently married in the age group 15-19.

### *Index of Contraception (Cc)*

In Bihar, only about 7.7 per cent of couples were currently effectively protected till 1972-73 right from the launching of the family planning programme. By 1978, this figure had increased to 13.0 per cent. This spurt in the percentage of couples protected may be due to a large number of sterilisa-

tions performed during the emergency period. However, currently effectively protected couples during 1978 and 1981 fell from 13.0 per cent to 11.9 per cent. While considering the effectiveness of different methods of contraception, the average effectiveness of contraceptive methods was assumed to be 1.0, 0.95 and 0.50 for a sterilisation, IUD and other methods respectively. The index of contraception worked out to 1.00 for 1971 and 0.873 for 1981 (Table 1).

TABLE 1

Estimates of some selected fertility measures, proximate determinants and indices of proximate determinants for the periods 1971 and 1981

	1971	1981
Crude birth rate (CBR)	41.9	39.1
Total fertility rate (TFR)	6.3	5.7
Total marital fertility rate (TMFR)	6.8	6.3
Duration of post-partum infecundability (i)	19.85	19.26
Percentage currently and effectively protected (u)	0.00	11.9
Index of marriage (C <sub>m</sub> )	0.926	0.905
Index of contraception (C <sub>c</sub> )	1.000	0.873
Index of induced abortion (C <sub>a</sub> )	1.000	0.998
Index of post-partum infecundability (C <sub>i</sub> )	0.522	0.530
Combined (C <sub>m</sub> x C <sub>c</sub> x C <sub>a</sub> x C <sub>i</sub> )	0.483	0.418

#### Sources

- (i) Census of India, 1981, PP 68, 5 per cent, Sample Data (Bihar)
- (ii) Sample Registration System in India, Year Book 1980 (Table 2)
- (iii) Family Welfare Programme in India, Year Book 1980 (Table E 2)
- (iv) Fertility Level and Trends in ESCAP Region, using Data from 1971 & 1981 Census of India, paper presented at IASP Bangalore, (Holla M. 1985)
- (v) Singh et al. JASA December 1979, Vol 74, No 368 and Srinivasan et al., 1985

#### Index of Induced Abortion (C<sub>a</sub>)

In India, induced abortion as a health measure was legalised in 1972 and its awareness among the people has been increasing. During the years 1976-77, 1977-78, 1978-79, 1979-80, 1980-81, 1981-82 and 1982-83, the number of MTP cases performed in Bihar were 1083, 2918, 6748, 7403, 9642, 9955 and 13,801 respectively. The index of induced abortion assumed to be 1.00 for 1971, was estimated at 0.998 in 1981. This indicates an increase of 0.2 per cent in induced abortion during the period 1971-81 (Table 2), and clearly shows the low induced abortion rate prevailing in the state for every 1000 pregnant women which, in fact, does not exercise any meaningful impact on the fertility level.

### *Index of Post-partum Infecundability*

Breast-feeding in Bihar is quite prolonged and usually continues upto the next pregnancy. It is also almost universal. However, data on this variable are rarely available; a few specific surveys conducted by various agencies and researchers remain the only source. In the case of Bihar, a baseline survey<sup>7</sup> of fertility and mortality was conducted during 1980-81 in collaboration with the International Institute for Population Sciences, Bombay, wherein data on the above variable as well as on the duration of post-partum amenorrhoea were gathered from all those women who had had at least one birth during the last four years from the date of the survey.

It may be pointed out here that in Bongaarts' aggregate model, the index of lactational infecundability was obtained from the average length of breast-feeding in the population. In fact, in the computation of the index, the average length of breast-feeding is first utilised to estimate the average infecundability period comprised by the duration of gestation and post-partum amenorrhoea, assuming a relationship between lactational amenorrhoea and post-partum amenorrhoea. The index of lactational infecundability is then ascertained by utilising the said estimate as the average infecundability period. However, in the above survey, such a situation did not arise as the average length of the infecundability period was directly available from the survey as 19.26 months<sup>7</sup>, and therefore the index of lactational infecundability was computed directly.

In the present paper, fertility decline during 1971-81 was studied, which required values of the index during 1971 and 1981. The estimate of post-partum infecundability referred to the period 1980-81. Since a decrement in this variable was expected over a period of time due to a decline in breast-feeding, it is suggested that the index be determined at various points of time especially when longer gaps of time are considered. In this regard, it may be mentioned that Singh et al<sup>8</sup> reported 19.86 months of post-partum infecundability based on a survey conducted in 1969-70, of about 2500 couples from 2200 households in 52 villages of Varanasi district in eastern Uttar Pradesh. Since the social customs and set-up of the population surveyed for this study are very similar to those of Bihar, the average length of lactational/post-partum infecundability of this survey may be considered to be the same as that of Bihar. Utilising the infecundability period during 1969-70 from the Varanasi survey, and during 1980-81 from the baseline survey of Bihar, the values of the duration of post-partum infecundability for the years 1971 and 1981 were interpolated and have also been presented in Table 1.

*Decomposition of the Change in TFR*

The decomposition of the proportional change in TFR into the components Pm, Pc, Pa and Pi requires a calculation of their values from the indices Cm, Cc, Ca and Ci as discussed in the methodology. The values of these components are presented in Table 2.

TABLE 2  
Decomposition of change in TFR during 1971-81

Factors responsible for TFR change	Percentage change in TFR	Distribution in percentage of change in TFR	Absolute change in TFR
Proportion of women married (Pm)	-2.27	-23.84	-0.14
Contraceptive practice (Pc)	-12.70	-133.40	-0.80
Practice of induced abortion (Pa)	-0.20	-2.10	-0.01
Duration of postpartum infecundability (Pi)	+1.53	+16.07	+0.09
Interaction (I)	+4.12	+43.27	+0.26
Total	-9.52	-100	-0.60

The results indicate that TFR has been declining during 1971-81. The decline of 9.52 per cent in TFR during 1971-81 can be broken down to give the relative contribution by each proximate determinant. In this instance, we see from Table 2 that in the decrement of TFR, a decline of 2.27 per cent is due to a decrease in the proportion of women married, that of 12.7 per cent is due to an increase in contraceptive practice, and only a 0.20 per cent decline accrues from an increase in the practice of induced abortion. Lactational infecundability has led to an increase of 1.53 per cent in the fertility level by reducing the practice of breast-feeding in the population.

**Conclusion**

The analysis of the four proximate determinants of fertility provides an insight into the changes occurring in the fertility level in Bihar with a certain progress in contraceptive practice. Bongaarts' aggregate model was applied to study the individual contribution of the four proximate variables responsible for an approximate fall in TFR of around 9.52 per cent during the decade 1971-81.

While the percentage change in TFR due to the proportion of women married was only 2.27 per cent, the percentage change due to increase in

contraceptive practice was around 12.7 per cent in the overall TFR decline. A decline in the duration of breast-feeding was apparent as there was a positive change of 1.53 per cent in the contribution due to lactational infecundability. The impact due to the combined effect rose from 51.7 per cent in 1971 to 58.2 per cent in 1981 for the state.

All the changes show a tendency in the existing fertility level to change for the better in the years ahead. An increase in contraceptive prevalence, and increases in the age at marriage, rate of induced abortions, female literacy and urbanisation etc. may set the pace for a new era in the demographic transition of Bihar which could lead to solving its present population problem.

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# **ORAL CONTRACEPTIVES AND BLOOD PRESSURE : A STUDY ON INTERRELATIONSHIP**

**MR. BIKASH BANERJEE +**

## **Introduction**

Oral contraception is one of the most effective means of controlling fertility. Consequently, oral contraceptives are now being used by many women in the country, irrespective of their educational background and/or socio-economic conditions. However, it is known that oral contraceptives have both beneficial and ill effects on the health of the users. For example, oral contraceptives give protection against benign breast disease<sup>1</sup>, excessive blood loss during menstruation<sup>2</sup>, dysmenorrhoea<sup>3, 4</sup>, cancer of the endometrium<sup>7, 8</sup> and ovaries<sup>9</sup>, and pelvic inflammatory disease (PID) which can lead to later infertility or ectopic pregnancy as a result of blocked tubes<sup>10</sup>. On the other hand, they have been reported to be associated with increased risk of certain major cardiovascular diseases such as venous thromboembolism<sup>11, 12</sup>, ischemic heart disease, including heart attack<sup>13, 17</sup>, cerebrovascular disease<sup>18, 19</sup> etc. There are also studies which show that oral contraceptives substantially raise blood pressure levels<sup>20-22</sup>. It is well known that blood pressure varies greatly and depends on several factors such as age, sex, altitude, physique, exercise, food habits, occupation, socio-economic conditions, etc.<sup>23-30</sup>

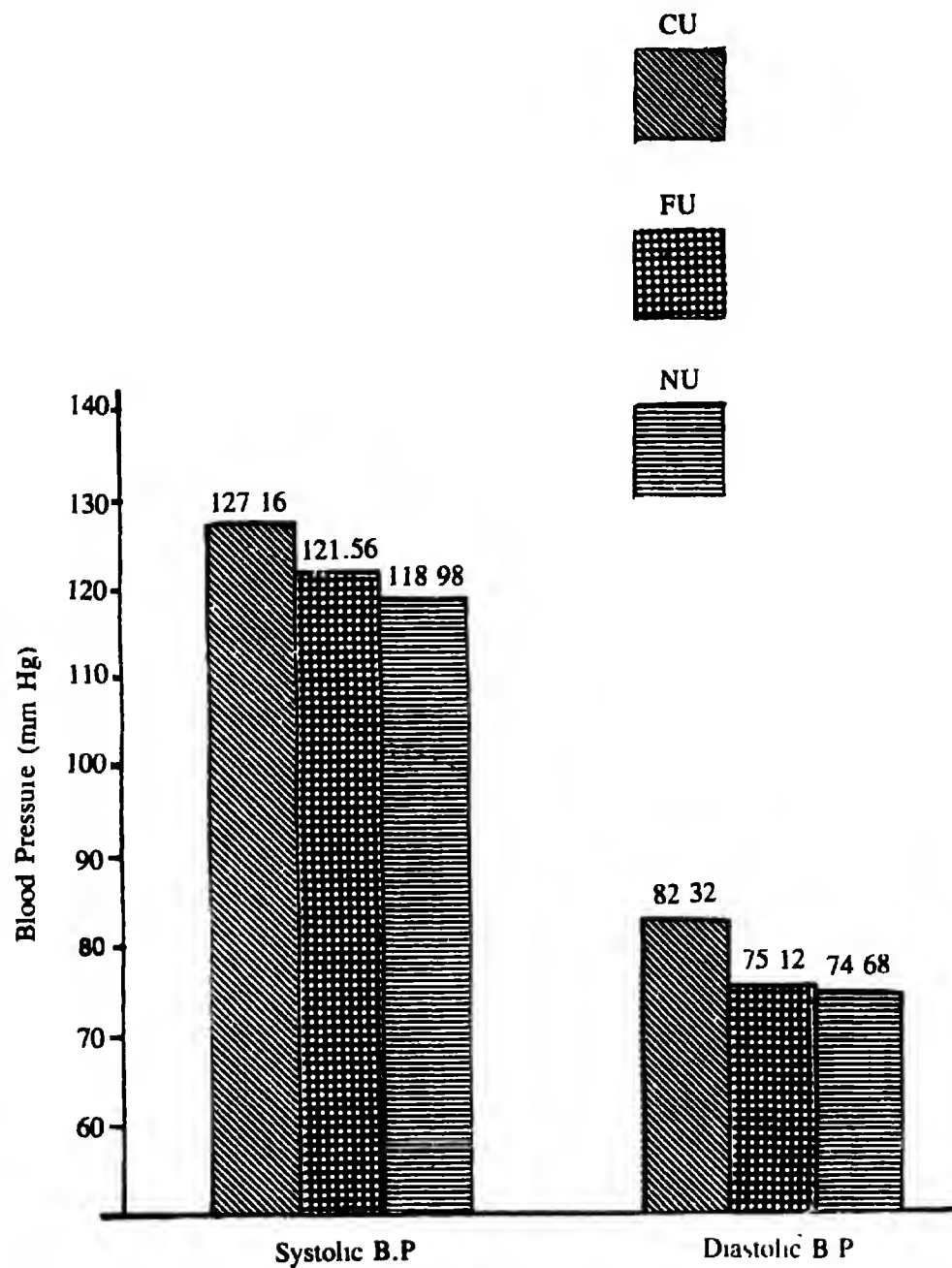
The main lacuna of earlier studies on the use of oral contraceptives and blood pressure levels was that they did not take into account the individual factors which may have some effect on blood pressure. Therefore, in the present study an attempt has been made to find out the causal relationship, if any, between the use of oral contraceptives and blood pressure in a rural population of West Bengal where most of the factors which are known to affect blood pressure mentioned above, were controlled.

## **Sample and Methodology**

The study was undertaken among the Mahishya population, a Hindu caste group of Brindabanpur village, under the Ulubaria sub-division of Howrah district in West Bengal. The study involved 120 women, aged between 22 and 39 years. Of these, 38 women who had been using oral contraceptives for the last twelve months at least were termed as 'current' users; 41 women who had stopped taking the pill for the last twelve months but had been us-

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Figure 1



Systolic and Diastolic Blood Pressure of 'Current' Users (CU)  
'Former' Users (FU) and 'Never' Users (NU)

ing it for at least one year prior to discontinuation were termed as 'former' users, and the remaining 41 women who had never taken any oral contraceptives were called 'never' users. The respondents were essentially housewives and did not have any other occupation. They belonged to the middle class stratum of society, and had more or less similar food habits, and faced more or less identical stresses and strains.

Blood pressure was measured on the right arm, in the morning after the respondent had had sufficient rest and was in a relaxed sitting posture. A clock-type sphygmomanometer was used and the reading was recorded in mm Hg.

### Results and Discussion

Both systolic and diastolic blood pressures were found to be highest among 'current' users (systolic: 127.16 0.73 mm Hg.; diastolic: 82.32 0.94 mm Hg.). The mean systolic blood pressures were 121.56 0.73 mm Hg. and 118.98 0.97 mm Hg. among 'former' users and 'never' users respectively, whereas their mean diastolic pressures were 75.12  $\pm$  0.70 mm Hg. and 74.68  $\pm$  0.68 mm Hg. respectively (Table 1).

TABLE 1

Systolic and diastolic blood pressure of respondents

Group	N	Age	Systolic Pressure (mm Hg )			Diastolic Pressure (mm Hg )	
			Mean $\pm$ SE	Mean $\pm$ SE	SD $\pm$ SE	Mean $\pm$ SE	SD $\pm$ SE
'Current user'	38	28 84	127 16	4 50		82 32	5 76
		$\pm$ 0 61	$\pm$ 0.73	$\pm$ 0 52		$\pm$ 0.94	$\pm$ 0.67
'Former user'	41	29.71	121 56	4.68		75 12	4.45
		$\pm$ 0 41	$\pm$ 0.73	$\pm$ 0 52		$\pm$ 0.70	$\pm$ 0.50
'Never user'	41	28 88	118.98	6.21		74 68	4.33
		$\pm$ 0 65	$\pm$ 0.97	$\pm$ 0.69		$\pm$ 0 68	$\pm$ 0 48

Figure 1 shows both the systolic and diastolic blood pressures in these three groups of women.

The 't' values as presented in Table 2 show that the differences between 'current' and 'former' users, and between 'current' and 'never' users were statistically significant in regard to both systolic and diastolic blood pressure. An equally significant difference was noticed in the case of systolic blood pressure of 'former' users and 'never' users. However, this was not so in the case of the diastolic pressure between these two groups.

TABLE 2

**'t' values of systolic and diastolic blood pressures of respondents**

Groups	t values	
	Systolic pressure	Diastolic pressure
'Current' x 'Former'	5.44*	6.15*
'Current' x 'Never'	6.76*	6.59*
'Former' x 'Never'	2.13*	0.45

\* Significant at  $P < 0.05$ 

When age corrections were carried out on all systolic and diastolic blood pressure values, the three groups did not differ significantly from one another (Table 3) except in the case of 'current' users against 'never' users ( $t = 6.22$ ;  $p < 0.0005$ ).

TABLE 3

**Correlation coefficients (r) between age and blood pressure of respondents**

Groups	Systolic pressure		Diastolic pressure	
	r	± SE	r	± SE
'Current' users	0.79	0.061	0.63	0.098
'Former' users	0.36	0.136	0.52	0.114
'Never' users	0.42	0.129	0.47	0.122

Table 4 shows the age-related trend of blood pressure through regression equations, wherein the diastolic blood pressure was found to be highest among 'current' users as compared to the other two groups. Systolic pressure is not generally taken into consideration because of its very fluctuating nature<sup>31, 32</sup>.

TABLE 4

**Regression equations of blood pressure on age of respondents**

Group	Systolic pressure	Diastolic pressure
'Current' Users	$X = 108.13 + 0.66y$	$X = 70.50 + 0.41y$
'Former' Users	$X = 115.62 + 0.20y$	$X = 65.91 + 0.31y$
'Never' Users	$X = 111.18 + 0.27y$	$X = 61.68 + 0.45y$

X = Blood pressure, y = Age

All the coefficients of correlation between age and systolic and diastolic blood pressure i.e.,  $r_{Csbp.Age}$ ;  $r_{CDbp.Age}$ ,  $r_{FSbp.Age}$ ;  $r_{FDbp.Age}$ ;  $r_{NSbp.Age}$  and  $r_{NDbp.Age}$  ( $r$  = Correlation coefficient; C = 'Current' users; Sbp = Systolic and Dbp = Diastolic blood pressure) were positively related (Table 3). Therefore the high values of blood pressure among 'current' users indicated a strong interrelationship between the use of oral contraceptives and blood pressure which corroborates the findings of Fisch and Frank<sup>22</sup> and Weir et al<sup>23</sup>.

Greenblatt and Koch-Weser<sup>29</sup> have reported hypertensive blood pressure readings among oral contraceptive users and no such changes among non-users. Though blood pressure levels among 'current' users were not high enough to be called hypertensive, they were higher than those observed in the other two groups. Hoover et al<sup>31</sup> observed that blood pressure may increase with continuous use of oral contraceptives, and that both systolic and diastolic pressure fell on discontinuation of the pill<sup>22 34</sup>. The present study also showed lower levels of blood pressure among 'former' users as compared to 'current' users as observed by Fisch and Frank<sup>22</sup> and Wessel et al<sup>34</sup>. It is suggested that the effect of oral contraceptives on blood pressure persists over a period of more than one year after discontinuation of their use as corroborated by the fact that the blood pressure levels of 'former' users were higher than those of 'never' users.

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# **AN ASSESSMENT OF THE COVERAGE OF THE UNIVERSAL IMMUNISATION PROGRAMME IN ALLAHABAD DISTRICT**

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and  
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## **Introduction**

India's expanded programme of immunisation (EPI) was introduced in 1978 with the twin objective of making vaccination facilities accessible to almost every family in the country, and attaining universal coverage of infants and children against the six common immunisable diseases by the year 1990. However, in practice, only a little over half of all families brought their children for the first injection and only three quarters of them returned for the second and third doses. An assessment conducted in 1982-83 showed that the coverage of pre-school children was 38.2 per cent for DPT, 17.3 per cent for polio and 8.8 per cent for BCG.

In order to accelerate these achievements, the universal immunisation programme was launched by the government of India in 1984-85 with massive support from UNICEF and WHO<sup>2</sup>. Allahabad district was one of the 35 districts selected for the implementation of the first phase of the programme, launched in Allahabad in November 1985. Under the new programme all medical and paramedical personnel were trained, and an effective cold chain delivery system was developed by providing a walk-in cooler, ice-line refrigerators, cold boxes and vaccine carriers at various points of vaccine delivery. All the beneficiaries were registered through a pre-immunisation survey carried out by paramedical personnel, and publicity was given through mobile loud speakers and by word of mouth. The present study was carried out with the aim of assessing the immunisation coverage achieved as a result of this new programme and also to find out the various reasons for partial or non-immunisation of beneficiary children.

## **Sample and Methodology**

A W.H.O. recommended cluster sample technique<sup>3</sup> was used to choose 30 clusters out of a total of 3,284 units of villages and mohallas in Allahabad

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district. In every chosen sample, a survey was conducted until seven children in the age group of 13-24 months were identified. A total sample of 223 such children were identified from the 564 houses surveyed. The parents of the children were interviewed to find out how they had come to hear about the campaign and the receipt of E.P.I. vaccines, and whether an immunisation card was issued to them.

The survey was conducted in March 1987 with the help of trained interns under the supervision of the authors. A child was classified as fully protected if he had taken all six E.P.I. vaccines; partially immunised, if full doses of one or more vaccines, but not all vaccines, had been given, and non-immunised if he had not received even one of the vaccines. The mother of the child was also asked whether she had received tetanus toxoid when she was carrying the child in question.

## Results

### *Coverage Assessment*

In the total population of 4,380,303 the survey of 564 houses in 30 cluster samples yielded 223 children in the age group of 13-24 months. The overall coverage was as follows: 29.6 per cent for DPT; 30.5 per cent for polio; 34.1 per cent for BCG; and 12.1 per cent for measles (Table 1). Between

TABLE 1

### Vaccination coverage

Vaccine	Dose	Number Vaccinated		% Drop out
D.P.T	I	117	(52.5)	—
	II	93	(41.7)	20.6 (1st to II <sup>nd</sup> dose)
	III	66	(29.6)	43.6 (1st to III <sup>rd</sup> dose)
Polio	I	117	(52.5)	—
	II	93	(41.7)	20.6 (1st to II <sup>nd</sup> dose)
	III	68	(30.5)	41.9 (1st to III <sup>rd</sup> dose)
B.C.G.		76	(34.1)	
Measles		27	(12.1)	
T.T.(Pregnant Mothers):	I	100	(44.8)	
	II	72	(32.3)	28.0 (1st to II <sup>nd</sup> dose)

Figures in brackets denote percentages

the first and second doses of DPT and polio, 20 per cent of the children dropped out. This number further fell to 43.6 per cent for DPT and 41.9 per cent for polio, between the second and third doses. The drop-out rate from the first to third doses was 51.3 per cent and 50 per cent for DPT and polio respectively, in the case of infants between 4-6 months, followed by infants between 7-9 months (49.4 per cent and 33.3 per cent respectively), and by those between 10-12 months of age (34.0 per cent and 40.4 per cent respectively).

Table 2 indicates that out of the total of 117 children who received any immunisation, 50.4 per cent did so from outreach units while the remaining obtained it from hospitals, health centres and private agencies. The drop-out rate from the first to third doses was maximum (54.2 per cent) among those immunised at the outreach sources as compared to those who had been vaccinated in hospitals (16.7 per cent). A majority (48.2 per cent) of the fully immunised children had been vaccinated at hospitals while the corresponding figure from outreach sources was only 3.7 per cent.

TABLE 2  
Vaccination coverage by source

Source	Infants Fully Immunised		Infants Partially Immunised		Pregnant mothers			
					1st dose		IInd dose	
	No.	%	No.	%	No.	%	No.	%
Hospital	13	48.2	15	16.7	31	31.0	28	38.9
Health Centre	6	22.2	28	31.1	23	23.0	11	15.3
Private								
Doctors	7	25.9	3	3.3	15	15.0	15	20.8
Outreach	1	3.7	44	48.9	31	31.0	18	25.0
Total	27	100.0	90	100.0	100	100.0	72	100.0

When asked about the source from which they had learnt about the immunisation campaign, about a fourth (23.8 per cent) of the parents declared that they had not received any information. While 29.6 per cent claimed to have heard it from the health workers, the radio was noted to be a source in 23.3 per cent of the cases. The rest of the respondents had obtained this information through the television (9.4 per cent), newspapers, (7.2 per cent), or megaphones and handbills or posters (6.7 per cent).

#### *Reasons for Non/Incomplete Immunisation*

The reasons given by the parents of 196 children who were not immunised or partially immunised are presented in Table 3. Both groups of parents ex-

pressed the non-availability of vaccines and vaccinators as the predominant cause. This reason was given by 53.3 per cent and 38.7 per cent of parents of partially and non-immunised children respectively. The next major cause was ignorance about the benefits of vaccination, or the need for returning for subsequent doses, as expressed by 31.1 per cent of the parents of partially immunised children and 40.5 per cent of the parents of children who were not immunised. Other reasons given by the parents were fear of side reactions, postponement to a later date, inconvenient timing, family problems, etc.

**TABLE 3**  
**Distribution of parents by reasons for not immunising or partially immunising their children**

Reasons	Partially immunised	Not immunised
Vaccinator/Vaccine not available	48 (53.3)	41 (38.7)
Unaware of need for immunisation	6 (6.7)	28 (26.4)
Unaware of need to return for 2nd and 3rd doses	22 (24.4)	15 (14.1)
Place unknown	—	6 (5.7)
Fear of side reaction	3 (3.3)	3 (2.8)
Postponed to another time	7 (7.8)	2 (1.9)
Place far away	1 (1.1)	2 (1.9)
Time inconvenient	2 (2.2)	—
Mother busy/family problems	1 (1.1)	4 (3.8)
No faith, etc	—	3 (2.8)
Worried about contra-indications	—	2 (1.9)
<b>Total</b>	<b>190 (100.0)</b>	<b>106 (100.0)</b>

Figures in brackets denote percentages

### *Coverage of Pregnant Women*

About 32.3 per cent of pregnant women had received tetanus toxoid, with a drop-out rate of 28 per cent from the first to the second dose. The majority of the mothers had received the toxoid from hospitals (38.9 per cent) and private clinics (20.8 per cent), about a fourth (25.0 per cent) were covered by outreach units and the rest by health centres. No drop-outs were noted among women who had received the toxoid from private clinics and only 9.7 per cent had dropped out from among those immunised at hospitals. The drop-out rate was maximum at health centres (52.2 per cent) and outreach sources (41.9 per cent).

## Discussion

The success of the immunisation campaign depends largely on three factors — the dissemination of information announcing the campaign among parents; the parents' compliance; and an effective vaccine delivery system. In Allahabad district, the vaccines are delivered through outreach units, hospitals, health centres, private practitioners, and voluntary agencies. The potency of the vaccines is safeguarded by proper cold storage and handling. In this study, a low immunisation coverage was observed in the case of all vaccines — figures as low as 12.1 per cent for measles, 30 per cent for DPT, 30.4 per cent for polio and 34.1 per cent for BCG.

The districts which participated in the universal immunisation programme were expected to give three doses each of DPT and polio and one dose each of BCG and measles to at least 85 per cent of the estimated infants during 1986-87. However, the performance was far from satisfactory. The achievements reported by the Government of India<sup>4</sup> were 65 per cent of the annual target.

Several workers<sup>5-7</sup> have reported coverage rates of 22 to 66 per cent for different immunising agents. The poor performance in our study and in others may be attributed to lacunae in the implementation of the programme, as evident from the high drop-out rates for DPT and polio vaccines (Table 1). Although higher rates of 50 to 75 per cent have been reported in studies carried out in other developing countries,<sup>7</sup> lower rates have also been reported.<sup>5-6</sup> In all these studies, different reasons have been put forward for discontinuation or non-immunisation. Chadha et al<sup>6</sup> observed illness of the child or mother as the most important reason while Pruthvish et al<sup>6</sup> and others<sup>7</sup> reported lack of awareness about immunisation schedules as the chief cause of drop-out and non-immunisation of children. In contrast to these studies, the non-availability of vaccines or vaccinators was found to be the prime cause of drop-out and failure of vaccination in our study.

The poor implementation of the scheme is illustrated further in Table 3 which showed that about one fourth of the parents had not received any information about the campaign, and word of mouth communication by health workers was the most effective channel, mentioned by 20.6 per cent of the parents. Balraj et al<sup>8</sup> also observed that communication by word of mouth was an effective channel for transmitting information about a poliomyelitis campaign in Madras city which they studied.

Among the various mass media used for publicising the programme, radio announcements were found to be the most effective (Table 3). Other channels of mass media were not as effective as person-to-person communication and the radio, although some persons did receive their information through the press and television.

### Summary

Any immunisation programme that is to continue will have to be based on accurate census data and periodic updates on new births. In addition, the programme should keep all parents informed about the facilities and the need for complete immunisation of their children and should maintain an efficient vaccine delivery system. Paramedicals, who are considered to be the key personnel for making immunisation services available at outreach and remote areas should be supervised regularly so that the beneficiaries are able to get uninterrupted immunisation services.

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# **FERTILITY AND ADOPTION OF TUBECTOMY AMONG RURAL WOMEN**

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## **Introduction**

In India, sterilisation has been the most recommended among the different family planning methods, since its introduction as a permanent method in 1956. Jejeebhoy<sup>1</sup> has reported that the household gets motivated to modify its fertility behaviour permanently when the number of living children in the family exceeds the desired number. The present study was conducted to examine whether the fertility behaviour of rural women is related to their adoption of tubectomy.

## **Objectives and Methodology**

The main objectives of the present study were to examine the association between adoption of tubectomy by rural women and their age, desired family size and fertility behaviour. The fertility behaviour of the tubectomy acceptors was studied in terms of the number of children desired by them, the difference between actual and desired family size and adoption of tubectomy, and the relationship between the number of pregnancies, number of living children and number of living male children and adoption of tubectomy.

Thirty-four villages in Dharwad taluka served as the locale for the study. Among these, ten villages were selected at random and two lists - one of tubectomy adopters, and the other, of non-adopters of permanent methods were prepared. Among those listed, ten willing adopters and ten non-adopters from each village were selected at random. Thus, hundred adopters and hundred non-adopters constituted the sample for the study. The respondents were classified under two age groups - those below 33 years, and those 33 years and above. This classification was based on an all-India survey,<sup>2</sup> (1975) which revealed that the average age of women undergoing the tubectomy operation was 33.7 years.

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A self-structured questionnaire consisting of two parts was used for data collection, through personal interviews. Part A provided information about age, type of family, education and occupation of the respondents and their husbands; these served as independent variables. Part B elicited information on the effect of qualitative independent variables viz., the number of pregnancies, number of living children, number of male living children and family size.

The data collected was statistically analysed. The chi-square test was used to examine the association between the adoption of tubectomy and the age of the respondents, and the difference between their actual and desired family size. The effect of the number of pregnancies, living children and living male children on the adoption of tubectomy was determined by a two-way analysis of variance.

## **Results and Discussion**

### **Age**

Age has been found to be an important determining factor for the adoption of tubectomy.<sup>7-11 21-23</sup> Many studies have revealed that the adoption of sterilisation by women was found to increase with age. In the present study also, a greater number of respondents belonging to the older age group of 33+ years (52 per cent) than those from the younger age group (48 per cent) adopted tubectomy. Among the non-adopters, 30 per cent were aged 33 years or more and the rest (70 per cent) were below 33 years of age.

The association between age and adoption of tubectomy was found to be significant at a 1% level (chi-square value = 10.00). The probable reason for this association could be that by the age of 33 years and above, a married woman will have had a sufficient number of living children. In India, the average age at marriage for girls being 16 to 18 years,<sup>12</sup> a woman aged 33 years or more would have completed more than one and a half decade of marital life; and will have borne a sufficient number of children who have crossed the age of critical growth and development. Thus, age appears to be a very important factor which influences the adoption of tubectomy.

### **Family Size**

Generally, a family gets motivated to modify its fertility behaviour only when the number of children exceeds the number of children desired. When the difference between actual and desired family size was examined to find out whether it would influence the adoption of tubectomy, the results showed that deficit fertility was significantly more in the case of non-adopters below 33 years of age than among adopters in the same age group. The probable reason for the non-adopters not opting for sterilisation despite their

excess fertility as manifest by one or more number of living children, could be that they did not have the number of children of the desired sex (Table 1).

TABLE 1

The difference between actual and desired family size of adopters and non-adopters

Age	Below 33 years			33 years and above		
	Adopters	Non-adopters	Total	Adopters	Non-adopters	Total
	No	No	No.	No.	No.	No.
-3		1		0	0	
-2	(2.08)	8	19	0	1	5
-1		9		1	3	
0	18 (37.50)	18 (25.71)	36	10 (19.23)	8 (26.26)	18
1	22 (45.84)	21 (30.00)	43	14 (26.92)	6 (20.00)	20
2	5 (10.42)	6 (8.57)	11	10 (19.23)	1 (3.33)	11
3	0 (0.00)	1 (61.43)	1	6 (11.54)	1 (3.33)	7
3+	1 (2.08)	2 (2.86)	3	5 (9.62)	3 (10.00)	8
Not thought	1 (2.08)	4 (5.72)	5	6 (11.54)	7 (23.33)	13
Total	48 (100.00)	70 (100.00)	118	52 (100.00)	30 (100.00)	82
	$X^2 = 15.28^*$			$X^2 = 11.21^{NS}$		

\* Significant at a 5% level      NS—Not significant

Figures in brackets denote percentage

Another reason for non-adoption of tubectomy by the younger respondents as revealed in the study was that a higher percentage of non-adopters desired more than three children (Table 2). Similarly, 5.72 per cent of non-adopters as against 2.08 per cent of adopters in the under 33 age group had not given a thought to their desired family size. Similar observations have been made by Speidel<sup>13</sup> in his article on the present and potential impact of female sterilisation in family planning programmes all over the world. He has stated that the acceptability of female sterilisation is usually higher in individuals who have achieved the desired family size.



**TABLE 2**  
**Number of respondents and the desired number of children**

Desired number of children	Below 33 years		33 years and above	
	Adopters	Non-adopters	Adopters	Non-adopters
1	1 (2.08)	0 (—)	0 (—)	0 (—)
2	16 (33.34)	14 (20.00)	8 (15.38)	4 (13.34)
3	18 (37.50)	21 (30.00)	19 (36.52)	7 (23.33)
3+	12 (25.00)	31 (44.28)	19 (36.56)	12 (40.00)
Not thought	1 (2.08)	4 (5.72)	6 (11.54)	7 (23.33)
Total	48 (100.00)	70 (100.00)	52 (100.00)	30 (100.00)

Figures in brackets indicate percentages

### *Fertility behaviour*

The data was subjected to two-way analysis of variance to find out the relationship between the adoption of tubectomy, and the number of pregnancies and number of living children. All the three factors were found to be significant in the case of the under 33 age group. Only the number of male living children emerged as a factor of significance for both age groups, either when combined or separate. This is in conformation with many other studies<sup>6,8-11,14-21</sup>. For example, Uppal<sup>11</sup> observed that 47.8 per cent of the women thought of getting a tubal ligation after having had three children, whereas only 30 per cent underwent the operation after they had had four to five living children. The average number of living children per couple at the time of operation was 4.3. Considering the number of living sons and living daughters per couple at the time of operation, barely one per cent of the women who had only daughters underwent sterilisation. In contrast, about 11 per cent of those who had sons but no living daughters adopted the terminal method. In other words, the majority of the respondents wanted two or three living sons before undergoing sterilisation.

The results of the above studies suggest the willingness of families having more male than female children to limit their family size. This clear preference for sons and refusal to adopt sterilisation until the family gets a

certain number of male children, is a great obstacle in the promotion of permanent methods of family planning. High preference for male than for female children was generally explained by the strong religious belief held among Hindus, that the son is indispensable for the performance of the last rites of his parents and for the continuation of the family line<sup>22</sup>. Another possible explanation put forth was that agrarian couples prefer large families to work in the fields<sup>23</sup>, and equally significantly, for providing economic security for the parents in their old age. Thus, especially in rural areas where conservatism and strong resistance to change traditional or religious beliefs exist, women are allowed to limit their fertility only when they have borne a certain number of sons, since sons are considered to be essential for performing the religious, social and economic duties of the family.

### Conclusion

The findings indicate that adoption of female sterilisation as a method of fertility control, was largely accepted by women who were 33 years of age and above. The reasons for this delay were very obvious. Couples were less likely to limit their families until they had attained the desired family size, especially the desired number of sons. The number of male living children emerged as the most significant factor in the adoption of tubectomy irrespective of the age of the respondents, thus revealing a clear preference for sons. The resistance of traditional rural societies to having small families and their strong preference for sons who are considered indispensable for religious, social and economic reasons, indicates the need for urgent action not only to popularize small family norms but also to educate people to consider sons and daughters as equals in order to remove strong son preference. This is indeed a very difficult task, but not an unsurmountable one, if pursued with determination. The following educational and welfare measures may help to gradually reduce the son preference to some extent.

1. Television, radio, posters, plays, folk lore etc., should be effectively used to project the scientific fact that all children irrespective of their sex, inherit genes from both their parents. Thus, like the son, the daughter who also inherits her parents' physical, intellectual and other characteristics, is equally able to continue the family lineage from the scientific point of view.
2. Mass media should also be used to project examples of women who are supporting themselves, their parents and their own families. This may help to create the concept of a daughter who can provide economic and social security to her parents in their old age.
3. As the low status of women in the family, religion and society is closely linked with strong son preference, all efforts should be made by the

Government, women's organisations, educationists, and rationalists to raise women's status and to guard it in the society.

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# **HOUSEHOLD HEADSHIP IN INDIA TRENDS AND IMPLICATIONS**

**DR. M. SIVAMURTHY \***

## **Introduction**

The study of headship of households is often undertaken in order to obtain projections of households and families<sup>1</sup>. A household is a socio-economic unit of persons living together, and is important in that it enables one to understand the present and future demand for goods and services required by the household as a unit of consumption<sup>2</sup>. It also acts as a unit of production<sup>3</sup>. In addition, a study of the size and composition of households and the characteristics of the heads of households reflects the pattern of living in a population.

Although the household has been the basic unit of enumeration in censuses and in many demographic investigations, the analysis of the household as a socio-economic unit does not seem to be well developed. The headship of a household which is determined by the socio-cultural practices existing within the community also need to be analysed for understanding living patterns.

## **Objectives**

The main purpose of the present investigation was to examine the characteristics of households and those of the heads of the households so as to bring out their characteristics and problems, and implications for planning and policy making. Particular attention was concentrated on the differences in the characteristics between households headed by males and females, and between those in rural and urban areas; in addition to examining the headship rates by sex and age in rural and urban areas. The data utilised in this study were mostly from the 1961 and 1971 censuses of India. However, for studying the trends some data from the 1981 census was also used.

## **Findings and Discussion**

### ***Trends in Households and Household Population***

In the census enumeration, the total population is distinguished as that

\* Presently at. Cairo Demographic Centre, Cairo (Egypt)

living in households and in institutions. Table 1 gives the changes in the number of households and the population in India during 1961-81.

TABLE 1

Changes in the characteristics of households and population: India, 1961-81

Characteristic	1961	1971	1981	Average annual growth rate (%) <sup>++</sup>	
				1961-71	1971-81
Number of households (in 000)	83752 9*	98361 6	119772 5	1 60	1 96
Household population (in 000)	432165**	539670	(674565) <sup>+</sup>	2 21	(2 22) <sup>+</sup>
Sex ratio (M/F) in household population	105 0	106 6	—	—	—
Total population (in 000)	439235	548160	685185	2.21	2 22
Sex ratio (M/F) in total population	106 3	107 5	107 1	—	—
Proportion of household population	98 4	98 5	(98 5)	—	—
Average household size					
Total	5 16	5 49	(5 63)	0 62	—
Rural	5 20	5 54	—	0 63	—
Urban	4 97	5 30	—	0 64	—
Proportion of households with female head					
Total	9 93	9 42	—	-0 53	—
Rural	10 02	9 56	—	-0 47	—
Urban	9 51	8 84	—	-0.73	—

\* Obtained by multiplying the number of sample households by 5.

\*\* Obtained by multiplying the estimated households by the average size.

+ Figures in brackets are estimates (see text).

++ Average annual rate calculated using mid-period population

Sources Census of India 1961, Vol 1 India, Part II-C(I)

Census of India 1971, Series 1 India, Part II-C(III)

Census of India 1981, Series 1 India, Part II

The number of households were found to increase from 83.8 million in 1961 to 98.4 million in 1971 and further to 119.8 million in 1981, recor-

ding an average annual increase of 1.60 per cent per annum during 1961-71 and of 1.96 per cent per annum during 1971-81. On the other hand, the household population increased faster at the rate of 2.21 per cent per annum so that the average size of the household increased from 5.16 persons per household in 1961 to 5.49 in 1971. The increase in household size in rural and urban areas was almost the same. The average household size had also showed an increase during the earlier decade from 4.90 in 1951 to 5.16 in 1961.<sup>2</sup>

Although the household population size for the 1981 census was not readily available to the author, it may safely be assumed that it has increased at the same rate as the total population. Based on this assumption, the average household size worked out to 5.63 in 1981. This progressive increase in household size may be attributed to an improvement in mortality and a continuation of the same pattern of living in India.

The non-household population was only 8.5 million forming about 1.5 per cent of the total population in 1971, and has probably increased to 10.6 million in 1981. It also appears that the non-household population contains a higher proportion of males than the household population (Table 2). The proportion of this population in 1961 was about 1.6 per cent of the total population, suggesting that the non-household population has decreased somewhat in relative terms. Whether this tendency has continued in the following decade could not be examined with the data on hand.

The sex of the head of the household is an interesting and important aspect of the household. In a male dominant traditional society such as the one in India, the female becomes the head only in certain special circumstances such as widowhood or divorce, or in the absence of the male member who is away at work in a different place, or due to other specific reasons.

Table 1 brings out that less than 10 per cent of the heads of households were females, and this proportion decreased slightly from 1961 to 1971. The decrease was higher in urban than in rural areas, which again confirms our earlier conclusion that there has not been much change in the living pattern of the Indian people.

### *Household Characteristics and Sex of the Head of Household*

It has been noted above that female headship is not very common in the Indian context. Then, do households with female heads differ from those with male heads in some respects? Table 2 presents the findings of this question.

A striking feature noted from this table was the higher proportion of female household heads in the older age group (50+ years) and the conspicuously smaller average household size in households headed by females.

TABLE 2

**Characteristics of households headed by male and female heads: India, 1971**

Characteristics	Male head	Female head
Number of households (in 000)	89090.1	9271.5
Proportion of households	90.57	9.43
Proportion in All ages	100 00	100 00
< 30 years	13 73	8 54
30-49 years	52 30	44 90
50+ years	33.97	46.56
Average size	5 68	3 64
Proportion of urban households	20 49	19 08
Proportion of single member households	4.47	26 54
Proportion of households with spouse living	83.48	2 54
Proportion of households with currently married sons	19 59	11 62
Proportion of households with currently married daughters	7 80	10.36
Proportion of households with currently married brothers	5 47	0 82
Proportion of households with currently married father	1 22	0 25
Proportion of households with currently married mother	2.19	0 46
Proportion of households having un-related		
Males	1 83	1 11
Females	0 44	0 62

*Source* Computed from the data given in Table C-I Part B(1) and B(11) in Census of India 1971, Series 1 India, Part II-C (III), Vol I Social and Cultural Tables, p 26-29.

*Note* Age not stated is included in the total

Another feature relating to the structure of the household which reveals an interesting aspect of the pattern of living in Indian society, was that the proportion of single member households was less than 5 per cent among the households headed by males, whereas it was more than 25 per cent among those headed by females. This reflects the fact that Indian males are more dependent on females for the maintenance of the household and for food. Thus, they invariably attach themselves to their children's families or even to the families of their brothers, which is clearly indicated when the proportion of male heads living with currently married sons or currently married brothers as compared with the proportion of female heads living with similar relatives. This is also attributed to the fact that Indian society allows males

to remarry more easily than females, in case of widowhood or divorce.

Another interesting finding was that male heads tended to live more often with their married sons, while female heads tended to live with their married daughters. Further, whenever the husband and wife were both living, the husband was invariably considered as the head of the family; thus females, currently living with their husbands, headed only 2.5 per cent of the households in the sample as against as many as 83.5 per cent of males, living with their spouses, who headed households. Even among the former, it is likely that the females were reported as heads because their husbands were away for purposes of employment or for other reasons. Similar results were observed by Duza and Sivamurthy<sup>4</sup> in the African context. Also, the proportion of female heads living with their married brothers was rather very low, being only 0.8 per cent. This again is a reflection of the social practice that the woman normally lives with her husband's family or independently when she meets with adversities of widowhood or divorce, and when she lives with her married brothers she is not considered as the head of the household.

A comparison of the proportion of male household heads living with currently married mothers with the proportion living with currently married fathers, revealed that in Indian society, the father does not commonly live in a household where the son or daughter is the head of the household; in fact, the father himself will usually be considered as the head. On the other hand, when the mother lives with her son or daughter, the latter will be considered as the head of the household and not she.

The proportion of households having unrelated males or females was generally very small, supporting the hypothesis that Indian society is a kinship-oriented society. Females living in households of unrelated persons were comparatively rare (Table 2). Further, the proportion of households with unrelated males was greater among households headed by males than among those headed by females, and the proportion of households with unrelated females was greater among the latter than among the former. These observations conform to the value orientations prevailing in Indian society.

### *Rural-Urban Differentials in Household Characteristics*

Out of the 98.4 million households enumerated in the 1971 census, 78.4 million were in rural areas and 20.0 million in urban areas. Table 3 presents the different household characteristics in the two areas.

A distinctive feature noted from this table is that the proportion of households with female heads was greater in rural than in urban areas. This is probably the result of rural people migrating to urban areas leaving their families behind. The proportion of single member households being higher



TABLE 3

## Rural-urban differentials in household characteristics in India: 1971 Census

Characteristics	Rural	Urban	Total
Number of households	78339.5	20022.1	98361.6
Proportion of households	79.64	20.36	100.00
Proportion of households with female heads	9.58	8.84	9.43
Proportion of households with heads			
< 30 years	12.77	15.07	13.24
30-49 years	50.78	54.80	51.60
50+ years	36.45	30.13	35.16
All ages	100.00	100.00	100.00
Average size of household	5.53	5.30	5.49
Proportion of single member households	6.00	8.70	8.55
Sex/ age of member Male			
< 30 years	6.71(25.5)	15.83(35.6)	8.82(28.9)
30-49 years	2.51(37.9)	5.39(44.2)	3.14(40.0)
50+ years	3.38(36.6)	4.49(20.2)	3.57(31.1)
All ages	3.37(100.0)	6.70(100.0)	4.05(100.0)
Female			
< 30 years	1.18(5.7)	0.96(7.3)	1.13(6.0)
30-49 years	1.34(25.9)	1.02(28.1)	1.27(26.2)
50+ years	4.93(68.4)	4.27(64.6)	4.82(67.8)
All ages	2.63(100.0)	2.00(100.0)	2.50(100.0)
Proportion of households with spouse living	77.48	74.93	76.96
Proportion of households with currently married sons	27.12	16.79	25.01
Proportion of households with currently married brothers	6.16	6.40	6.21
Proportion of households with currently married father	1.09	1.26	1.13
Proportion of households with currently married mother	1.99	2.18	2.03
Proportion of households with unrelated			
Males	1.86	5.84	2.67
Females	0.39	1.42	0.57

Source: Same as for Table 2

Note: Age not stated is included in the total.

in the urban areas, especially among males aged less than 30 years, and the proportion of households with the spouse living, being higher in rural areas, supports the above conclusion. However, the overall average household size was only slightly higher in rural areas as compared to that in urban areas, being 5.53 persons per household and 5.30 persons respectively.

Although it is a common cultural practice in India that the married sons live with their parents, the fact that it is more a rural trait can also be seen from Table 3. A number of factors contribute to this phenomenon. The most important among these is that in rural areas, agricultural work keeps the parents and their children together working on the same farm, whereas in urban areas, the sons may take up jobs which necessarily take them away from their parents.

Another observation of interest was that the proportion of households having unrelated persons was almost three times higher in urban than in rural areas. This indicates that in urban areas, households are composed of persons migrating from their area of origin who may be known to them but may not be their relatives. Further, the problem of housing in urban areas may also induce unrelated persons to cooperate with each other and live together.

#### *Headship Rates in India, 1971*

Headship rates can be considered as the chance of a person to become the head of a household. The analysis of headship rates is an important and interesting aspect in family demography. These rates are useful in making household projections also. The recognition of a person as the head of the household depends on socio-cultural practices. Thus, in the Indian context, the eldest male member in the household is generally regarded as the head irrespective of whether he is the bread-earner or an active member of the household, unless that person is an unrelated person.

Table 4 presents the headship rates in 1971 by sex and age of the head of the household in rural and urban areas. The rates are calculated excluding single person households. The headship rates in rural and urban areas were not very much different, as seen from the table, indicating that socio-cultural practices were more or less identical in both the areas.

In general, male headship rates were higher in rural areas than in urban areas both when single member households were included and excluded. But, in the case of females, the rates were almost the same in the two areas except in the age group 50+ years, where the urban rate was conspicuously higher. One explanation for this phenomenon seems to be that more often, in rural areas the son is automatically considered as the head of the household even if the mother is alive, whereas in urban areas, the mother may be considered as the head as long she is active.

It is also interesting to note that the headship rates for females were far

TABLE 4

Household headship rates (per cent) in India: 1971

Age of head of household	Rural			Urban			Total		
	Male head	Female head	Total	Male head	Female head	Total	Male head	Female head	Total
(Including Single Member Households)									
<30 (20-29)	29.82	1.97	15.51	27.27	1.57	15.53	29.18	1.88	15.51
30-49	74.08	7.29	41.61	72.96	7.22	44.42	73.83	7.28	42.19
50+	87.48	13.34	52.28	83.53	16.23	52.61	86.78	13.83	52.33
All ages									
P (0 +) 1	31.44	3.51	17.84	31.08	3.51	18.35	31.36	3.51	17.94
P (20 +) 2	64.87	7.11	36.48	59.41	7.12	36.02	63.67	7.11	36.38
(Excluding Single Member Households)									
30 (20-29)	27.68	1.61	14.28	22.75	1.24	12.93	26.44	1.53	13.97
30-49	72.05	6.14	40.01	68.73	6.18	41.57	71.31	6.15	40.33
50 +	84.12	7.91	47.93	79.16	11.33	48.00	83.24	8.49	47.94
All ages									
P ( 0 +) 1	30.27	2.55	16.77	28.79	2.72	16.75	29.96	2.58	16.77
P (20 +) 2	62.45	5.15	34.29	55.04	5.51	32.89	60.83	5.22	34.00

lower than those for males especially in the under 30 age group. A similar pattern has been observed in other countries, for example in Japan<sup>5</sup>. The significant increase in the headship rates in the age groups (30-49) and (50+) years may be attributed to the fact that older people are considered as heads and that it is only after living with the parents for some length of time, that married couples set up separate households of their own.

### Conclusion

Analyses of the characteristics of households and the headship rates from the Indian census data reveal that there has not been much change in the traditional pattern of living in India. The practices also seem to be the same

in rural and urban areas. However, single member households were greater in number in urban areas, especially in the under 30 age group. Thus, the move of the Government to establish hostels for working persons should be considered as a welcome move. Similarly, attention will have to be given to the care of aged females living in single member households in urban areas. More attention will also have to be paid to analyse the headship rates in different states and at different points of time.

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# **THE MOTIVATING FACTORS FOR VASECTOMY IN SRI LANKA**

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## **Introduction**

The total number of sterilisations performed in Sri Lanka dropped from 42,000 in 1974 to 19,000 in 1977. In an attempt to arrest this declining trend, the Government of Sri Lanka initiated an incentive scheme in 1979 to pay medical teams who performed surgical contraception. On January 1st, 1980 this scheme was extended to acceptors of voluntary surgical sterilisation and each vasectomy acceptor was given a monetary incentive of Rs. 100/- (US \$4) towards loss of income, travel and subsistence costs. In October 1980, this incentive was increased to Rs. 500/- (US \$20), then reduced to Rs. 200/- (US \$8) in March 1981 and subsequently increased to Rs. 300/- (US \$12) on 1st January 1982.

A study of the number of vasectomies performed during this period (Table 1) shows a direct relationship with the value of the incentive payment. The total number of vasectomy acceptors reached a peak number when the incentive payment was at its maximum and the acceptance figures dropped when the incentive was reduced.

What is not known and what has not been studied is whether the vasectomy acceptor is motivated more by the monetary incentive or by the dire necessity to limit his family size. The objectives of this study, therefore were

- (1) to determine whether the payment of a monetary incentive had any influence on the acceptance rate of male sterilisation in Sri Lanka,
- (2) to study the socio-economic background of acceptors of male sterilisation, and
- (3) to investigate the knowledge, attitudes and practice of vasectomy among male acceptors of voluntary sterilisation.

## **Sample and Methodology**

Clients who were acceptors of voluntary male sterilisation and who had been previously adequately counselled were interviewed by a pre-tested ques-

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**TABLE 1**  
**Vasectomy acceptors in Sri Lanka, 1979-1982**

Period	Duration	Incentive payment (Rs)	Total no of vasectomies
1979	12 months	Nil	5,640
1980 (Jan - Sept )	9 months	100/-	10,119
1980 (Oct - Feb '81)	5 months	500/-	62,315
1981 (Mar - Dec )	10 months	200/-	6,274
1982 (Jan - Oct )	10 months	300/-	9,316

tionnaire before the operation was performed in order to determine the reasons for acceptance. This interview was carried out both at the main sterilisation clinic in Colombo and at various vasectomy camps conducted in the rural areas and estate sector during a three-month period from November 1980 to January 1981 when the incentive payment was Rs. 500/-. The questionnaire was administered by the principal investigator to 549 acceptors of voluntary sterilisation. A statistical analysis of the data was carried out and the findings are presented.

## Results

### *Demographic Characteristics*

Fifty two per cent of the acceptors of vasectomy were aged between 25-35 years (Table 2). This appears to be in accordance with the consistent decline in family size and age of sterilisation acceptors in several countries<sup>1,2</sup> but in contrast to the findings in the USA where most individuals were in the age group 35-45 and were thus more mature<sup>1</sup>. In 60.5 per cent of our cases, the age of the wife at the time of vasectomy was also between 25-35 years, while 57.3 per cent of the spouses were under the age of 30 years.

One hundred and thirty five acceptors (24.6 per cent) had been married for less than five years at the time of sterilisation and 81 of them had only two living children. The fact that nearly 25 per cent chose permanent contraception after less than five years of marriage is probably because divorce and remarriage is relatively uncommon in Sri Lanka. It is also interesting to note that of these 135 acceptors, 18 acceptors had only one child but were requesting a permanent method of contraception inspite of counselling. Six acceptors in this study were not legally married though they asked for a vasectomy; it is not uncommon in rural areas for couples to live together and have children without going through the legal formalities of marriage. As many

**TABLE 2**  
**Demographic characteristics of acceptors**

Characteristic	No. of acceptors
<i>Age of acceptor (yrs)</i>	
20-24	27 (4.9)
25-30	132 (24.0)
31-35	155 (28.0)
36-40	103 (19.0)
41-45	77 (14.2)
46-50	49 (8.7)
51-55	6 (1.2)
<i>Age of wife (yrs)</i>	
Less than 20	18 (3.3)
21-24	104 (19.1)
25-30	193 (34.9)
31-35	140 (25.6)
36-40	67 (12.2)
41-45	20 (3.8)
Not known	7 (1.1)
<i>Duration of marriage (yrs)</i>	
0 - 5	135 (24.6)
5 - 10	210 (38.3)
10 - 15	110 (20.7)
15 - 20	56 (9.8)
More than 20	38 (6.6)
<i>No. of living children</i>	
1	24 (4.4)
2	219 (39.9)
3	163 (29.5)
4	65 (12.0)
5	44 (8.2)
6 or more	34 (6.0)
<i>Age of last child</i>	
0 - 6 months	102 (18.6)
6 months - 1 year	103 (18.8)
1 - 2 years	178 (32.4)
2 - 3 years	47 (8.6)
More than 3 years	119 (21.6)

Figures in brackets denote percentages.

as 69.4 per cent of the acceptors had either two or three children, but 24 acceptors in this study requested a permanent method of contraception even though they had only one child. Of these 24 acceptors, four reported that their wives were already pregnant and requested an abortion. All these acceptors were adamant inspite of repeated counselling and insisted on surgical sterilisation.

Seventy eight acceptors had no living male children but yet requested sterilisation. Of these, 54 were poor estate labourers who owned no land of their own and hence were not too concerned about the presence of a male child in the family, which to them only meant an additional mouth to feed. In rural Sri Lanka a male child is highly valued as an additional hand to help the father. Eighty three acceptors (15.3 per cent) had no living female children. A female child poses many problems for a parent in Sri Lanka because giving the child in marriage entails the gifting of a dowry to the bridegroom. A study of the age of the last child showed that in the case of 102 acceptors (18.6%), the age of the last child was only six months or less at the time of vasectomy and 45 of these acceptors had only two living children. In spite of prolonged counselling all these acceptors requested permanent contraception.

#### *Socio-economic Characteristics*

Eighty one point eight per cent of the acceptors were Sinhalese while 16.9 per cent were Tamils (Table 3). The Sinhalese (77 per cent) formed the majority ethnic community in Sri Lanka. Table 3 also shows the occupation and monthly income of the respondents

Only eleven per cent of the acceptors had any form of high school education while all others had only had elementary education. None of the acceptors had entered a University or a seat of higher learning. Unlike studies by other workers<sup>4,6</sup>, which have shown that men who choose vasectomy are highly educated and that the higher the educational level attained, the greater was the proportion of persons who underwent vasectomy, in our study the majority who underwent vasectomy belonged to the labour class with little or no educational background. Most of the acceptors were poor (83.5 per cent) and earning a monthly income of less than Rs. 500/- (US \$20), which was the value of the incentive payment made during the period of study. This seems to suggest that in third world countries where unemployment is an inherent problem, poor people are willing to get a vasectomy done merely to obtain money and the decision making process is influenced by the monetary incentive.

#### *Family Planning Practice*

Four hundred and fifty nine acceptors (83.5 per cent) had never used



**TABLE 3**  
**Socio-economic characteristics of acceptors**

Characteristic	No. of acceptors
<i>Nationality and Religion</i>	
Sinhalese Buddhist	423 (76.9)
Sinhalese Christian	26 (4.9)
Tamil Hindus	85 (15.3)
Tamil Christian	8 (1.6)
Muslim	3 (0.5)
Burger (Christian)	3 (0.5)
<i>Occupation</i>	
Unemployed/on strike	56 (10.2)
Unskilled	332 (60.5)
Semi-skilled-manual	39 (7.1)
Skilled-manual	104 (18.9)
Clerical	12 (2.2)
Professional/Managerial	6 (1.1)
<i>Monthly income (Rs )</i>	
Less than 250	144 (26.2)
251-500	316 (57.3)
501-750	59 (10.9)
751-1000	26 (4.9)
More than 1000	4 (0.7)

Figures in brackets denote percentages

or practiced any type of contraceptive method. These results are similar to those observed in other third world countries like Bangladesh<sup>7</sup>, Ghana<sup>8</sup> and Sri Lanka<sup>9</sup>, and are in contrast to the findings in the western world where nearly 98 per cent stated that they had used some form of birth control prior to vasectomy, and that permanent methods of contraception were considered only when temporary methods like the pill and IUD became unacceptable.<sup>10</sup>

None of the acceptors in our series gave any consideration to a temporary method of contraception prior to resorting to a permanent method and were averse to any counselling on temporary methods. Even among the few acceptors who had used a temporary method of birth control, the usage was very infrequent and irregular. Of the 54 (9.8 per cent) acceptors who had used a condom only two had used it for protection continuously for four years. All the others reported that they only occasionally used a condom. Eighteen (3.3 per cent) spouses of the acceptors had used oral contraceptives at some

stage after marriage but of them only four had used this method continuously for over a year. The maximum duration of use of oral contraceptives in this series was two and a half years. All the other women had given it up after less than ten cycles. Some couples had used both oral contraceptives and condoms at different periods. The use of the IUD, Depo Provera and coitus interruptus was limited to 12 (2.2 per cent), 2 (0.4 per cent) and 4 (0.8 per cent) respectively.

If these acceptors had been concerned about limiting their family size they would have practiced a temporary method more frequently. Notably, discontentment with temporary methods was not expressed as a factor in the decision making process. These findings indicate that the degree of motivation to limit family size was not very strong and suggests that the men had subjected themselves to sterilisation for purposes other than contraception.

### *Referral Source*

Two hundred and thirty seven (43.1 per cent) of the acceptors had heard of vasectomy from friends and relatives; this interpersonal communication having being made by a satisfied acceptor. It appears that the Sri Lankan male places a great deal of trust on the advice given to him by his vasectomised friends and relatives. One hundred and fifty nine respondents had heard of vasectomy from medical personnel who included the estate dispenser, medical officers or family health workers. Family planning propaganda is fairly heavy in the mass media with programmes and discussions being broadcast very frequently over the radio and printed in the daily newspapers. Even though the literacy rate in Sri Lanka is 78 per cent, mass media accounted for only 20.7 per cent of the referral source in contrast to the findings of Kohli<sup>6</sup> in New York, where mass media played the most important role in referring persons for vasectomy. Among the rest, the wife and the welfare society provided the referral source for 3.8 per cent and 3.5 per cent of the respondents respectively.

### *Reasons for Not Accepting Vasectomy Earlier*

Though 147 acceptors (26.7 per cent) had heard about vasectomy more than two years before they actually underwent the operation (Table 4), they had postponed it for various reasons. The remaining respondents had come to know about male sterilisation only during the past two years.

One hundred and thirty seven acceptors (25.1 per cent) had only one child and wanted another child (Table 5) and 95 per cent of them presented themselves for vasectomy soon after the birth of the second child. One hundred and five acceptors (19.1 per cent) had heard about vasectomy for the first time only at the preoperative propaganda meetings which preceded the

TABLE 4

## Duration since first coming to hear about vasectomy

Duration	No. of acceptors
0 - 3 months	156 (28 9)
3 - 6 months	33 (5 5)
6 - 9 months	12 (2 2)
9 - 12 months	3 (0 5)
1 - 2 years	198 (36 0)
2 - 3 years	59 (10 9)
3 - 4 years	46 (8 4)
More than 5 years	42 (7 6)

Figures in brackets denote percentages

TABLE 5

## Reasons for not getting a vasectomy done earlier

Reason	No. of acceptors
Wanted another child	137 (25 1)
Didn't know of it earlier	105 (19 1)
Frightened of operation	95 (17 3)
Had no opportunity earlier	73 (13.3)
Wanted a girl	24 (4 3)
Wanted a boy	30 (5 5)
Felt shy to get it done	12 (2.2)
Wife had an IUD	3 (0.5)
Thought I won't get any more babies	5 (0 9)
Did not know where to go	28 (5 2)
Difficult to exist now	37 (6.6)

Figures in brackets denote percentages.

operating teams' visits by three to four days and were either immediately convinced about the need for a permanent method to limit their families or were attracted by the monetary incentive.

It appears that in many instances the decision for sterilisation was made hastily quite in contrast to the long period of two to ten years required for the decision making process by the average U.S. male<sup>10</sup>. In our study, 36 per cent had made the decision within one year of first coming to hear about vasectomy. While 40 per cent of the men in the U S. had made up their minds that they wanted no more children at least five years before undergoing a vasectomy,<sup>10</sup> only 7.6 per cent in our series had known about vasectomy for more than five years. Only 26 per cent in our series had been aware of vasectomy for more than two years, while nearly all acceptors in the United States had known about it for two years or longer.

Seventy three acceptors (13.3 per cent) stated they had no opportunity to get it done earlier and gave reasons as "pressure of work", or "had no leave". Twenty eight acceptors did not know where to go to get a vasectomy done. Ninety five acceptors (17.3 per cent) did not opt for surgical sterilisation earlier because they were frightened of the operation or its complications. They accepted sterilisation once they found out the details of the operation and were advised by other satisfied acceptors that this was a simple surgical procedure with no serious complications.

The majority (89.5 per cent) of the acceptors had absolutely no fear about getting a vasectomy done. Only 58 acceptors (10.5 per cent) had certain reservations. 25 of them thought they would be unable to do heavy work after the operation, eleven believed it was a very painful procedure and eleven considered the operation would result in some form of sexual disability. It appears therefore that the average acceptor is well informed of the nature of this minor surgical procedure, is aware of its complications, and that very few have any misconceptions regarding vasectomy.

### *Motivational Factors*

When asked the reasons why the respondent wanted to get a vasectomy done, 216 (39.9 per cent) stated quite frankly that it was to obtain the incentive payment. Some wanted this money quite urgently and gave reasons as, "to purchase a bicycle"; "to attend to my mother's funeral expenses"; or "to buy school books for my children". Many stated, "I have no steady job and I need the money" as a reason for getting the vasectomy done.

Two hundred and ninety eight acceptors (54.4 per cent) stated that they wanted to get sterilised purely for economic reasons and not merely for the purpose of obtaining the incentive payment. This compares favourably with the findings of Ferber, et al<sup>11</sup> in the United States, Sobrero and Kohli<sup>12</sup> in

India, and Gue and Douglas<sup>13</sup> in Australia. The reasons given by these acceptors were "inadequate economic resources"; "too many children"; "can't feed any more children"; and "conditions were not so difficult a few years ago but now it is difficult to exist".

Twenty nine acceptors stated that they were persuaded by their wives to get a vasectomy done, the reason being that "the wife is working and does not want any more children", or that "the wife was medically advised not to have any more children". Very few (six respondents) claimed to have been advised by their friends to adopt this method.

No respondent stated that he wanted a vasectomy because of previous contraceptive failure or side effects or because they did not trust other methods, or because of aversion to contraceptive use or because of pleasure criteria which were the common motivating factors for a vasectomy in the United States<sup>11</sup>. The effectiveness of vasectomy as a contraceptive method which was the strongest single attraction for vasectomy in the U.S.<sup>10</sup> was never mentioned as being a factor in the decision making process, and was totally ignored in our sample.

In reply to the question, "If the incentive was not paid would you get a vasectomy done?", 448 acceptors (81.4 per cent) answered in the affirmative, while 59 acceptors (10.9 per cent) replied that would not have got it done if the incentive was not paid to them. From this direct question it appears that 10 per cent of the acceptors were getting a vasectomy done solely for the monetary incentive. This result is in contradiction to the response to the question as to the reasons why they want to get a vasectomy done, where nearly 40 per cent stated it was for the incentive payment. This discrepancy is difficult to reconcile but is probably due to the shyness of the individual to freely and frankly admit that it is the monetary incentive he is after and that he would not consent for surgery if this was not paid.

While other studies reveal that the acceptors required detailed answers to several questions before a decision was made to undergo vasectomy<sup>10</sup>, in our series very few ever asked any questions before making a decision. The six events described as being factors in the decision making process in western countries<sup>14</sup> seem to be totally inapplicable to Sri Lanka.

## Discussion

Financial incentives for sterilisation are offered in many third world countries like India, Bangladesh, Nepal and Sri Lanka. The incentive paid in Sri Lanka is the highest paid in any Asian country and was found in most instances (83 per cent) to be more than the monthly salary of the acceptor, and hence served as a very powerful incentive. The ability to obtain more than a month's salary after a mere three-minute sacrifice of one's fertility

seems to be a very attractive bait in the poor underdeveloped countries. The fact that incentives fuelled the acceptance rate in India is well documented.<sup>15</sup>

An analysis of the statistics for vasectomy during a three-year period (Table 1) shows that the number of sterilisations have fluctuated *pari-pasu* with the amount of the incentive payment. The greater the value of the incentive, the greater seems to be the motivation to get a vasectomy done.

The veracity of the statement made by 54.4 per cent of our respondents who stated that what motivated them was economic reasons rather than the incentive money is dubious, for if economic reasons were the chief motivating factor than an increase in the monetary incentive should not have caused a significant increase in the number of acceptors. Statistics however reveal that the maximum number of vasectomies were performed in Sri Lanka during the short period of five months when the incentive payment was Rs. 500/-. A reduction of the incentive to Rs. 200/- resulted in a dramatic fall in the number of acceptors. Thereafter, an increase in the incentive by a mere Rs. 100/- resulted once again in a significant increase in the number of vasectomies performed over an identical period of time (10 months). In the sterilisation programme in Sri Lanka there is absolutely no coercion and acceptors have complete freedom either to accept or reject the operation. As such, the payment of an incentive could be considered to be compatible with human rights.

The findings that the age of the last child in the case of 18.6 per cent of the acceptors was less than six months; that the age of the wife at the time of vasectomy was so young; that 4.4 per cent had only one living child; that no consideration was given to temporary methods before vasectomy; that vasectomy was done in nearly 25 per cent of our sample within five years of marriage when they had only two living children; and that the acceptors presented themselves for operation within three months of hearing about the operation, are all pointers which seem to indicate that factors other than the dire need to limit the family size are at work in influencing the decision making process. The incentive offered tends to cloud the acceptor's judgement to make a careful decision on sterilisation and it is the monetary incentive that drives these men to the vasectomy clinic. Very few studies the world over quote a monetary incentive as a motivating factor but it seems that in Sri Lanka this is a major factor that motivates the man to accept vasectomy and is in contrast to the suggestion made by Kohli<sup>16</sup> that people will not come forward for vasectomy unless they have all the children they want. This suggests that a withdrawal of the monetary incentive is likely to result in a collapse of the vasectomy programme in Sri Lanka, and that vasectomy figures could be increased in all third world countries with absolutely no coercion, merely by offering an adequate incentive.

Sterilisation as a method of fertility control is gaining popularity in third

world countries. There is no doubt that it has been further popularised and the demand has increased with the introduction of an incentive payment as is seen in the Sri Lanka experience, but it is doubtful whether this incentive payment can significantly lower the birth rate for it has been shown that countries with increasing prevalence of sterilisation do not experience a proportionate decline in the birth rate<sup>16</sup>. As to whether there would be a long term indirect effect of the incentive on the quality of life in Sri Lanka is debatable.

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# **INCENTIVES FOR ADOPTION OF FAMILY PLANNING VIEWS OF ACCEPTORS AND MOTIVATORS**

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## **Introduction**

Family planning incentives have been introduced mainly for persuading eligible couples to accept family planning. In the early sixties, Enke<sup>1, 2</sup> and Pohlman<sup>3</sup> proposed large incentives to couples for encouraging small families. They argued that children, especially sons, are of greater economic value to the family as a source of monetary benefits, whereas births averted contribute more significantly to society. Hence, it would not be wrong if an individual is paid compensation for avoiding births. However, in India, incentives have been paid as a compensation to acceptors of sterilisation and IUD insertion for wages lost, food, and drugs during their stay at the hospital and transport to the place of service. Besides, motivators of sterilisation and IUD are also paid incentives. Repetto<sup>4</sup> justified the scheme of paying incentives to family planning motivators on the basis of the data available from the vasectomy programme in Madras state (now Tamil Nadu). He argued that family planning workers really work hard, contacting couples several times to convince them about the adoption of family planning. He also noted that they often experienced abuse, harassment and low social status, and so it might be appropriate to pay incentives to them for their effort in bringing couples for family planning procedures. But in recent years, motivator incentives have been used mainly for achieving family planning targets.

At present, the states receive Rs. 180/-, Rs. 200/- and Rs. 12/- for each case of vasectomy, tubectomy and IUD, respectively, from the central government, as revised in 1983. Out of this amount, acceptors of sterilisation generally get Rs. 100/- after deduction for food and transport and IUD users get Rs. 9/-. Motivators are provided Rs. 10/-, Rs. 5/- and Re. 1/- per case of vasectomy, tubectomy and IUD respectively. Further, the states are allowed to add more to this central assistance. A review of the incentive programme by Satia and Maru<sup>5</sup> indicated that the nature of incentives offered by the In-

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dian government has not changed since inception, though the amount has varied over the years.

While the need for incentives and their impact on the family planning programme has been controversial ever since their introduction, in recent years, much of the debate is on the quantum and mode of payment of incentives needed for obtaining better results in view of achieving India's national goal of a Net Reproduction Rate of 1.00 by the year 2000 A.D. So far, the amount of incentive has been decided by administrators and planners based on judgement and other assumptions and there has not been much empirical research on this subject<sup>3</sup>.

Although various schemes have been proposed, they have been based on theoretical reasons, without examining the views of acceptors or motivators. Therefore, it may be desirable to understand the views of both acceptors and motivators about the need for and adequacy of incentive payments. It is also important to know their views about the amount and mode of incentive payment for obtaining better results in view of achieving the national goal that the country has set for itself.

### **Objectives and Sample**

The present paper attempts to analyse the views of 306 women who underwent tubectomy, about the adequacy of incentives given for the acceptance of this operation, and the mode of incentive payment. It also seeks to understand separately, the opinions of 139 Primary Health Centre (PHC) staff (that is, the motivators), about the necessity of offering incentives to acceptors and motivators, the amount of the incentive to be given, and the introduction of a disincentive scheme in the family planning programme. The views expressed by the sterilisation acceptors are based on data collected during a Health and Family Welfare Programme Evaluation Survey conducted in 1985 in two PHC areas of Karnataka state, by the Population Research Centre of the Institute for Social and Economic Change, Bangalore<sup>6</sup>. The data pertaining to PHC staff is based on a study of Incentives and Disincentives for Promoting Family Planning, also conducted by the Centre in a sample of five PHCs of Karnataka in 1985<sup>7</sup>.

### **Results and Discussion**

#### ***Acceptors' and Motivators' Views on Acceptor Incentives***

##### ***Need for Acceptor Incentives***

When asked whether they thought that incentives should be given at all for adopters of family planning, the health staff of the PHC were in complete agreement for giving incentives. They felt that incentives would be

necessary as long as couples living in rural areas needed motivation for adopting family planning. Offers of incentives are still used as a major source of attraction by field workers during the course of motivating a couple for family planning acceptance, especially among illiterate, rural couples. Thus, it is obvious that acceptor incentives play a major role in family planning performance. This should not lead us to conclude that money is an important reason for adoption of family planning.

It is true that a few earlier studies<sup>8-11</sup> have reported that cash incentives are a major reason for vasectomy acceptance. However, in recent years no such data have been available. Nevertheless, the impact of incentives on performance of family planning has been analysed by some authors. Rogers<sup>12</sup> argued that, "adopter incentives increase the rate of adoption of an innovation", based on data available from the Tamil Nadu vasectomy programme<sup>4</sup> and the impact observed in private sector programmes. Similarly, based on a sample of 4,000 workers from eight private sector industries, Khan and Prasad<sup>13</sup> concluded that a motivator is more effective when he comes with an offer of incentives. Therefore, there appears to be some justification for the views expressed by the motivators.

### *Awareness*

Are eligible couples aware of incentives for family planning? Srinivasan and Reddy<sup>14</sup> reported from a survey of 3,371 respondents in Karnataka that in rural areas, about 72 per cent of the respondents were aware of incentives and 54 per cent could specify the exact amount paid. In urban areas, the awareness was slightly higher (77 per cent) and about 60 per cent of them could give details of the amount paid. They also reported that about 61 per cent of the respondents in rural areas and 58 per cent in urban areas approved of incentive payments to acceptors. A recent survey<sup>5</sup> of 900 rural couples in Gujarat has also indicated that awareness about family planning incentives was as high as 85 per cent.

### *Leakage of Incentives*

Studies conducted during the late sixties mentioned the possible misappropriation of incentive money before reaching the hands of the acceptor. The study by Kapoor and Chandhoke<sup>9</sup> indicated that about 15 per cent of the vasectomy acceptors in their sample received Rs. 10-15 less, whereas they were supposed to get Rs. 30/-. Other studies<sup>10, 11</sup>, have reported that about 5 per cent of the sample acceptors did not receive the incentive at all. Therefore, before analysing the views of acceptors and motivators on the adequacy of the amount paid, it was thought appropriate to find out whether any leakage of acceptor incentive money had occurred at least in the study area.

The answers of the 306 respondents in this study revealed that tubectomy acceptors generally got about Rs. 100/- when they were discharged from hospital after making deductions for food and transport. Acceptors of laparoscopic sterilisation got Rs. 155/- immediately after the operation. These are the actual amounts sanctioned for acceptors of female sterilisation in Karnataka, as revised in 1983. Thus, there appears to be no misappropriation of acceptor incentives in our sample.

### *Enhancement of Incentives*

The respondents, who were acceptors of tubectomy or of laparoscopic sterilisation were asked whether the compensation amount received by them was adequate for undergoing the operation and if not, what would they consider as an adequate sum. Of the 306 respondents, a majority (71 per cent) expressed the view that the amount was insufficient and that a minimum incentive of about Rs. 340/-\* for undergoing female sterilisation (i.e. an increase of about Rs.200/- over the present amount\*\* should be provided. about 22 per cent considered it adequate, while 7 per cent could not give a specific answer. In the study conducted by Srinivasan and Reddy<sup>14</sup>, a slightly smaller proportion of respondents (about 63 per cent in rural areas) expressed dissatisfaction over the incentive amount given to sterilisation acceptors.

The opinions of motivators (the PHC staff) regarding acceptor incentives were also in near unanimity, with as many as 123(89 per cent) expressing inadequacy of the incentive amount, and suggesting an increase. This argues strongly in support of asking for higher incentives for the adoption of female sterilisation. Of course, most of the health staff (110 or 79 per cent) felt that the amount paid to vasectomy acceptors also needed revision. However, in the case of IUD acceptors, this proportion was still lower (86 or 62 per cent), because many among the field staff, particularly the female health assistants and health workers, did not favour an increase in the incentives paid to IUD acceptors. They felt that any further increase in this amount would lead to misuse of funds by the public, as the woman might come for repeated insertions by removing the IUD herself. Satia and Maru<sup>5</sup> have also reported similar views expressed to them by programme officials of some states. However, we do not have data to support this view.

Those health staff who expressed inadequacy of the present amount, sug-

\* Since the suggested minimum amount varied from Rs. 200/- to Rs. 500/-, the median was taken

\*\* In Karnataka state, acceptors of female sterilisation get an incentive of Rs. 155/-.

gested a minimum (average) amount of Rs. 253/- for tubectomy, and Rs. 271/- and Rs. 18/- for acceptors of vasectomy and IUD insertion respectively. These amounts suggest a rise of about Rs. 100/- for tubectomy and vasectomy acceptors and Rs. 10/- in the case of IUD acceptors over the existing rates paid in Karnataka\*.

### *Mode of Payment*

Payment of acceptor incentives in the form of cash was regarded as unethical by Enke<sup>2</sup> and Pohlman<sup>3</sup> who considered it as offering a bribe to couples for limiting family size. Therefore, it was considered likely that the acceptor may feel guilty after receiving the incentive. Another disadvantage was the possible misuse of the incentive money by the husband. There were other suggestions too. These included payments in kind, such as housing, clothing, agricultural implements and social benefits like free education for children and free health services to family members of acceptors<sup>3</sup>, savings bonds<sup>15</sup>, and old age security<sup>16</sup>.

However, experiments indicated that none of the schemes other than cash payment were administratively feasible in a country like India<sup>17</sup>. Hence, it may be interesting to know the type of payment expected by the acceptors. Can motivators suggest the mode of payment for acceptors? The responses showed that a majority (67 per cent) of the respondents (female sterilisation) preferred to be paid in cash rather than in kind (15 per cent). Of the remaining, 10.5 per cent did not mind either cash or in-kind incentives or both, while 7.5 per cent did not have any comment to make on the issue.

Preference for cash payment may perhaps be because the money can be used for meeting urgent domestic needs. Yet, 15 per cent of the respondents preferred in-kind payment in the form of a basket of items such as medicines, tonics, fruits, clothes, household utensils, etc. Those who suggested that the payment be made partly in cash and partly in kind were of the opinion that cash could be useful for post-operative care, while any in-kind incentives would be of supplementary use. The responses of the PHC staff were mixed on this question. About 40 per cent of them suggested that it would be better to give part of the incentive money in kind. They felt that though paying the entire amount in cash would enable the acceptor to use the amount according to his priorities, payment in kind would ensure the best of use of the incentive. However, only a few (3 per cent) of the health staff recommended purely in-kind incentives.

\* In Karnataka Rs. 155/-, Rs. 175/- and Rs. 8/- are provided for tubectomy, vasectomy and IUD acceptors, respectively

### *Family Planning Compensation for Whom?*

Further classification of acceptor respondents by selected background characteristics such as number of living children, educational attainment, occupation and the minimum amount expected by them showed some interesting patterns in their responses.

The findings showed that a slightly smaller proportion (68 per cent) of respondents with less than four living children expressed inadequacy of the incentive amount than those with four and more living children (74 per cent) (Table 1, Panel A). However, the minimum amount (Rs. 350/-) suggested by the former group of acceptors was higher than that (Rs. 332/-) suggested by the latter group. The inconsistent pattern in their responses perhaps indicates the situation after the family planning operation. Some of the respondents argued that the compensation paid was actually for the wages lost during their stay in the hospital which was of one week's duration, whereas actually, wages were lost for a longer period, because even after they had been discharged from the hospital, they would stay at home for two to three months to take rest before resuming their normal work. Hence, the amount paid as compensation would not be sufficient for post-operative care. It was also mentioned that sometimes the acceptors had to bear the expenses of those whose services would be required for their post-operative care, both in the hospital and at home.

The classification of respondents by their educational attainment showed a clear pattern in their responses (Table 1, Panel B). Larger proportions of illiterate (76 per cent) and less educated (73 per cent) acceptors were dissatisfied with the present incentives than the more educated acceptors (42 per cent). This is in conformity with our assumption that there is an actual need for compensating the illiterate and the less educated acceptor than the one with a higher education. More educated acceptors may not show much concern for the value of the incentive amount as their acceptance of family planning is likely to be voluntary.

It has been observed that family planning incentive takers generally belong to the poorer sections of society<sup>3</sup>. Nevertheless, among those who suggested a higher incentive were women who had had at least high school education as compared to those with less education or no education. If educational attainment improves one's earnings, then the observed positive relationship between educational attainment and the minimum incentive suggested by the acceptors could be attributed to the earnings foregone by them. However, from this observation we should not conclude that a higher rate of compensation may be recommended to more educated acceptors.

The incentive offered to family planning acceptors is more often justified on the grounds that it is a compensation for lost wages. This was clearly

TABLE 1

**Responses of tubectomy acceptors regarding adequacy of incentives and the amount preferred by selected background characteristics**

Background characteristics	Per cent response			Total	Minimum amount (median) suggested (in Rs )
	Adequate	Inadequate	Cannot say		
<b>A. No of living children</b>					
3 or less	22.8	68.4	8.8	100(193)	350
Above 3	21.2	74.3	4.4	100(113)	332
Total	22.2 (68)	70.6 (216)	7.2 (22)	100(306)	342
<b>B Educational status</b>					
Illiterate	16.5	75.7	7.9	100(152)	337
Less educated (Primary and middle)	20.3	72.9	6.8	100(118)	344
More educated (high school and above)	52.8	41.7	5.6	100(36)	383
Total	22.2 (68)	70.6 (216)	7.2 (22)	100(306)	342
<b>C Occupational status</b>					
Wage labour (agriculture & non-agriculture)	13.6	78.6	7.9	100(140)	350
Family labour	25.0	71.4	3.6	100(56)	342
Household work	31.8	60.0	8.2	100(110)	333
Total	22.2 (68)	70.6 (216)	7.2 (22)	100(306)	342

The figures in brackets refer to the number of observations. Minimum amounts (median) are based on inadequate responses

indicated when we analysed the responses by occupational status (Table 1, Panel C). A larger proportion of wage labourers (79 per cent) felt the present incentive to be inadequate as compared to household workers (60 per

cent). Wage labourers suggested a minimum incentive of Rs. 350/- for female sterilisation.

An analysis of the responses regarding the mode of payment of incentives by background characteristics of acceptors indicated that the larger proportion of late acceptors, illiterate acceptors and wage labourers preferred incentives in cash than early acceptors, and literate, more educated, family

TABLE 2

**Response of tubectomy acceptors regarding mode of payment of incentives by background characteristics**

Background characteristics	Mode of payment preferred ( Per cent)				Total
	Cash	Kind	Both/ anything	Cannot say	
<b>A No of living children</b>					
3 or less	63.7	17.6	11.4	7.3	100(193)
Above 3	72.6	10.6	8.9	8.0	100(113)
Total	67.0 (205)	15.0 (46)	10.5 (32)	7.5 (23)	100(306)
<b>B. Educational status</b>					
Illiterate	72.4	10.5	8.6	8.6	100(152)
Less educated (primary and middle)	61.0	21.2	11.9	6.9	100(118)
More educated (high school and above)	63.9	13.9	13.9	8.3	100(36)
Total	67.0 (205)	15.0 (46)	10.5 (32)	7.5 (23)	100(306)
<b>C Occupational status</b>					
Wage labour (agriculture & non-agriculture)	72.1	11.4	9.3	7.1	100(140)
Family labour	62.5	17.9	14.3	5.4	100(56)
Household	62.5	18.2	10.0	9.1	100(110)
Total	67.0 (205)	15.0 (46)	10.5 (32)	7.5 (23)	100(306)

The figures in brackets refer to the number of observations

household workers (Table 2). Reciprocally, a larger proportion of early acceptors and literate, more educated, family labourers or household workers wanted payment in kind than late acceptors, illiterate and wage labourers. It is interesting to note here that satisfaction about the present incentive was also higher among these categories of acceptors. Therefore, a direct association appears to exist between the incentive amount and the socio-economic background of female sterilisation acceptors.

### ***Motivators' Views on Motivator Incentives***

#### ***Necessity of the Scheme***

Is there any need for motivator incentives? Of the 139 respondents, 115(83 per cent) strongly felt that incentives are necessary for family planning motivation. They argued that, in recent years targets have been fixed at all levels including targets for village level functionaries, for fulfilling which, special efforts are required in terms of working beyond the scheduled time, particularly by the field staff. Since PHC targets are generally achieved through the field staff, it was likely that they would lose their enthusiasm if the scheme were to be withdrawn. This, in turn, could affect their performance. While studying the vasectomy programme in Tamil Nadu, Repetto<sup>4</sup> showed that abolition of canvasser incentives in 1963 led to a decline in vasectomies in Madras state and restoring the scheme produced a sharp increase in the following year. From this observation, some authors even implied that motivator incentives were more important than acceptor incentives.

Those health staff (24 or 17 per cent) who did not favour incentives for motivators were of the opinion that PHC staff need not be paid incentives when family motivation is specified as a part of their duty. It should be noted that motivator incentives are not restricted to the health staff alone but are extended to any one who brings a couple for adoption of family planning. From field experience we understand that the number of couples motivated by persons other than the health staff is not insignificant in rural areas. In the absence of motivator incentives, it is likely that this proportion of couples would be left unprotected. Thus, as felt by a majority of the respondents, the present scheme of incentives for motivators needs to be continued for some more time in view of improving family planning adoption rates.

#### ***Increasing the Motivation Incentive Amount***

Not all the 115 respondents who favoured the scheme of incentives for motivators, however, were in favour of an increase in the motivation amount. While 81 respondents (70 per cent) suggested a revision in the rate of IUD motivation, about half of them only wanted a rise in the amount given for terminal methods, 56 per cent wanted the motivator incentive for tubectomy



to be raised and 51 per cent desired that for vasectomy to be increased.

Thus, the case for increasing the motivators' incentive for IUD was stronger than that for sterilisation. On the other hand, in the case of acceptor incentives, a higher proportion of the health staff (respondents) suggested an enhancement in the incentives given to adopters of sterilisation. This implies that the field staff face a greater difficulty in motivating couples to accept the IUD. Perhaps it may be much easier to motivate couples for sterilisation, because in rural areas adoption of family planning has predominantly come to mean the acceptance of sterilisation. Some of those, particularly the supervisory staff and medical officers who did not suggest a rise in the incentive amount for motivators of sterilisation, felt that if higher amounts were offered for motivating sterilisation acceptors, there would be a competition among the field staff for bringing couples for adoption of sterilisation. Though this may be desirable in view of the need for increasing the number of acceptors, there would be administrative difficulties as more than one person would be likely to claim the motivator's incentive for the same acceptor, thereby creating a conflict. In such cases, it would be difficult to decide who the actual motivator is.

The health staff who expressed dissatisfaction over the present rate of motivator incentives, were asked to specify an amount for payment in future. Those (81 respondents) who favoured higher incentives for IUD motivation, suggested a minimum amount of Rs. 5/-\*. Similarly, a minimum incentive of Rs. 25/- and Rs. 27/- were suggested for motivating tubectomy and vasectomy acceptors respectively, by those (64 and 59 respondents respectively) who favoured higher incentives for these methods. These amounts indicate a rise of Rs. 4/-, Rs. 10/- and Rs. 7/- for IUD, tubectomy and vasectomy motivation respectively, over the existing rates in Karnataka\*\*. This implies that the rise suggested for IUD motivation is substantially high. From this observation one wonders whether the poor IUD performance in recent years could have been due to the indifference shown by the motivators as they receive a meager sum (Re. 1/- per insertion) as motivation incentive. Of course, all the health staff of the PHCs included in the sample subscribed to this view.

Those health staff who suggested an enhancement in the amounts given to acceptors as well as motivators were asked to indicate the impact of revision on family planning performance. It was encouraging to note that a majority of them felt confident that they would be able to improve their

\* Since there was some variation in the minimum amount suggested, the average was computed.

\*\* Re. 1/-, Rs. 15/-, and Rs. 20/- are provided for IUD, tubectomy and vasectomy motivation, respectively.

achievements if their recommendations were implemented. Only about 6 per cent were doubtful about the effectiveness of their recommendations.

### *Introduction of Disincentives*

Disincentives have never been imposed in the Indian family planning programme except for a brief period during the emergency (1976-77)<sup>5</sup>. For example, disciplinary action was taken against those field workers who did not achieve their allotted family planning targets. Couples with three or more children who did not undergo sterilisation were denied loans, allotment of land for housing, free medical treatment at government hospitals, etc. These disincentives led to coercion in the community and a decline in the family planning performance in subsequent years. Keeping this in view, we asked the PHC staff to react to the introduction of disincentives in family planning.

Most of the supervisory staff such as health assistants, block health educators and medical officers suggested disincentives for field workers who did not achieve family planning targets. However, it is difficult to say whether a disincentive scheme for field workers alone would really improve the situation. Because many other factors like unrealistic target setting, lack of availability of a sufficient number of eligible couples in a particular area, resistance from local people, etc. could also contribute to an under-achievement of family planning targets.

Regarding the introduction of disincentive schemes for resistant couples, about 48 per cent of the PHC staff answered in the affirmative. They felt that couples who are reluctant to accept a family planning method should be deprived of government subsidies and other benefits. However, in rural areas, the imposition of such disincentives could pose practical difficulties.

### **Summary and Conclusion**

This paper analyses the views of 306 female sterilisation acceptors and 139 PHC staff (motivators) in Karnataka state, about the need for and adequacy of the present amount of family planning incentives, the mode of payment to acceptors in relation to certain socio-economic characteristics as well as their views about disincentives for family planning.

There appears to be no misappropriation of acceptor incentives unlike in the past. Acceptors of female sterilisation seemed to be dissatisfied with the present rate of incentives, and suggested a minimum increase of about Rs. 200/- in the existing amount. The health staff were also in favour of increasing incentives to acceptors, requesting a minimum increase of about Rs.100/- for terminal methods and Rs. 10/- in the case of IUD acceptors over the present rates. Cash incentives were preferred to in-kind incentives.

Late acceptors, illiterate couples and wage labourers were much con-

cerned about the inadequacy of the incentive amount. In fact, by and large, female rural acceptors are poor, and really need the money as they would lose their wages for many days as a result of adopting sterilisation. Perhaps due to the wide gap between the compensation paid and the wages actually lost, and an increase in the present cost of living, the poor seemed to be unhappy over the amount received. However, they asked for lower amounts than did the educated and economically better-off among the acceptors. But, this does not mean that they did not want higher incentives. Perhaps their perception inhibits from asking for higher incentives, and they are unable to conceive what the quantum of compensation should be.

To conclude steps should be taken to increase incentives to acceptors which are inadequate at present. If incentives are justified as compensation for losing wages, then it is necessary to think of ways of identifying couples who would really need compensation for accepting family planning. If the aim is to increase family planning adoption, administrators and planners may think of paying adequate incentives to acceptors, particularly the poor, considering the rise in wages in present days. There is a need for rationalisation of the compensation amount, taking into consideration the prevailing wage rates, the price situation, and the number of days of wages actually lost by adoption of sterilisation.

Finally, there is a need for increasing incentives for IUD and tubectomy motivation for fulfilling family planning targets. A minimum increase of Rs. 4/-, Rs. 10/- and Rs. 7/- was suggested by the health staff for motivating each IUD, tubectomy and vasectomy case respectively. Primary Health Centre supervisory staff such as health assistants and block health educators were in favour of a disincentive scheme for field workers who did not achieve their family planning targets. However, there was no definite consensus among the health staff regarding disincentives for non-acceptors. Disincentives may not be desirable considering the practical difficulties in their implementation.

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# **BREAST-FEEDING PATTERNS IN BANGLADESH**

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## **Introduction**

Breast milk is the most appropriate substance which supplies, in abundance, those nutrients which constitute the main nutritional requirements of the new-born infant, that is, for its rapid growth and for the complex development of its brain<sup>1</sup>. It not only provides the necessary nutritional needs of infants, but also transmits certain antibodies from the mother to the child<sup>2</sup>. There is also a lower risk of contacting diarrhoeal disease among babies if weaning is delayed to an older age.

Breast-feeding acts as a natural contraceptive for the mother. It delays the resumption of menstruation and ovulation upto a certain period after childbirth. Prolonged lactation<sup>3</sup> in a highly fertile community could prevent upto 20 per cent of births. It has been reported that after the birth of a child, the fecundity of a breast-feeding mother is lower than that of a non-breast-feeding mother<sup>4,5</sup>.

This paper, attempts to investigate whether the duration of breast-feeding varies with different demographic and socio-economic characteristics of women and their households. The demographic and socio-economic variables considered are current age of the woman, the number of children ever born, place of residence, level of education, and method of contraception used. As it is difficult to separate the effects of demographic variables from those of socio-economic variables, both these variables have been considered together.

## **Data and Methodology**

This study is based on the primary analysis of a sub-set of data obtained from the Bangladesh Fertility Survey (BFS) conducted in 1975-76 by the Ministry of Health, Population Control and Family Planning of the Government of Bangladesh, in collaboration with the International Statistical Institute (ISI) as a part of the World Fertility Survey Programme. The analysis is based on information from the last closed birth interval (the period between the birth of the last but one child, and the last child). Information on breast-feeding

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was available for the last closed birth interval of 4,640 women interviewed.

Different indices can be used to measure the length of breast-feeding. Among others these include the mean and the median durations of breast-feeding. In this case, the mean duration as an index of breast-feeding is not as meaningful as the median, because the former is affected substantially by the longest and the shortest duration of breast-feeding of some women. Therefore, the median duration of breast-feeding was used as a measure of the length of breast-feeding.

## Results

Breast-feeding is virtually universal in Bangladesh. Almost 98 per cent of the mothers breast-fed their penultimate children from birth. In rural Bangladesh, only two per cent of the children were not breast-fed. The mean and median durations of breast-feeding for all children were 23.2 and 23.8 months respectively. When child mortality was considered, that is, if only children who survived upto the time of weaning were considered, the mean and median durations of breast-feeding rose to 24.4 and 24.0 months respectively.

TABLE 1

Median duration of breast-feeding in the last closed birth interval of ever-married women aged 15-49, by current age

Age group (years)	Median duration (in months)
15-19	18.1 ( 275)
20-24	23.7 ( 963)
25-29	23.8 (1024)
30-34	23.8 ( 732)
35-39	24.0 ( 636)
40-44	24.0 ( 571)
45-49	24.0 ( 439)
All	23.8 (4640)

Figures in brackets denote the number of respondents

Source: Bangladesh Fertility Survey Tape, 1976

Table 1 shows the median duration of breast-feeding by current age of the respondents. It indicates that the median duration rises from 18 months at ages less than 20, to 24.0 months at older ages, and remains virtually constant from ages 20 to 49. The only marked differential in the median dura-

tion of breast-feeding is thus seen between ages below 20 and over 20. Nortman<sup>6</sup> observed a degree of excess risk of neo-natal and infant mortality among offspring of teenage mothers as compared with that among offspring of mothers in their twenties. She found that at birth order one, neonatal and infant deaths were over 25 per cent higher for babies of teenagers than for babies of mothers in their twenties. The high infant mortality among young mothers in Bangladesh may have shortened the duration of breast-feeding and created the differential observed in the above table.

Table 2 represents the median duration of breast-feeding by current age and number of children ever born. There was no pronounced variation in the median duration of breast-feeding from parity one to nine, but for parity ten and above the median duration of breast-feeding dropped from 23.7 to 18.1 months.

TABLE 2

**Median duration of breast-feeding in the last closed birth interval of ever-married women aged 15-49, by current age and number of children ever born**

Age group (years)	Median duration of breast-feeding (months) for children ever born				
	1-3	4-5	6-7	8-9	10+
15-19	18.2 (265)	*	—	—	—
20-24	23.9 (679)	18.2 (265)	*	—	—
25-29	24.1 (300)	23.9 (466)	18.4 (217)	17.7 (38)	*
30-34	24.2 (87)	24.0 (230)	23.9 (265)	21.8 (128)	17.6 (22)
35-39	24.0 (46)	24.2 (114)	24.3 (224)	23.8 (168)	17.8 (85)
40-44	24.2 (50)	23.8 (82)	24.2 (160)	23.8 (177)	18.4 (101)
45-49	24.4 (45)	29.5 (67)	23.9 (133)	23.9 (96)	23.5 (96)
All(4641)	23.9 (1473)	23.8 (1234)	23.9 (1017)	23.7 (610)	18.1 (307)

Figures in brackets denote number of respondents.

Source: Bangladesh Fertility Survey Tape, 1976

\* Fewer than 20 cases

Table 2 also shows that the median duration of breast-feeding of mothers aged 20-24 with four to five children, was about five months shorter than that of mothers in the same age group who had less than four children. Further, within each age group, mothers with higher parities tended to have shorter durations of breast-feeding. For example, in the age group 30-34, mothers

with ten or more children breast-fed their children for a median duration of 17.6 months, whereas, mothers with eight to nine children breast-fed them for a median duration of 21.8 months and those with six to seven children, for a median duration of 23.9 months. Similarly, in the age group 35-39, mothers with ten or more children breast-fed for a median duration of 17.8 months. On the other hand, the corresponding periods for mothers with eight to nine children and with six to seven children were 23.8 months and 24.3 months respectively. A weak declining trend in the median duration of breast-feeding among mothers in the age groups 25-29 and 30-34 after parity one to three can also be seen from the table. In a population with natural fertility, women of very high parity could not have breast-fed for a very long period or they would not have achieved that parity.

Table 3 presents the median duration of breast-feeding by current and childhood place of residence of the respondents. The median duration of breast-feeding of those respondents currently residing in rural areas, but who grew up in urban areas, was as long as that for indigenous rural respondents. This might be because women reared in urban areas have completely adjusted to

TABLE 3

**Median duration of breast-feeding in the last closed birth interval of ever-married women aged 15-49, by current and childhood place of residence**

Place of residence	Median duration of breast-feeding in months
Currently rural	
Grew up in rural area	23.8 (4193)
Grew up in urban area	23.7 (75)
Currently urban	
Grew up in rural area	23.5 (254)
Grew up in urban area	17.9 (114)
Current residence	
Rural	23.8 (4272)
Urban	18.4 (368)
Childhood residence	
Rural	23.8 (4447)
Urban	18.3 (189)
All	23.8 (4640)

Figures in brackets denote the number of respondents.

Source: Bangladesh Fertility Survey Tape, 1976.



the rural way of living where prolonged breast-feeding is a social norm.

The median duration of breast-feeding of urban respondents reared in urban areas was about 5.6 months shorter than that of their counterparts who were reared in rural areas. When current urban residence was taken into consideration, the median duration of breast-feeding of urban respondents was about five months shorter than that of rural respondents, and when their childhood place of residence was considered, respondents with an urban background were observed to breast-feed their children for about five months less than those with a rural background.

Table 4 shows the median duration of breast-feeding by current age and level of education of the respondents. The median duration of breast-feeding of mothers with more than five years of education was about five months shorter than that of mothers with five or fewer years of education and of mothers with no education. In rural Bangladesh, Khuda and Choudhury<sup>7</sup> also observed that among mothers who had been to school, the duration of breast-feeding was negatively associated with their educational levels.

A major difference in the median duration of breast-feeding was noticed between respondents with five or fewer years of education, and those with more than five years of education (Table 4). The difference between the two groups decreased with age. For example, respondents aged between 20-24 who had more than five years of education, had a median duration of breast-

TABLE 4

Median duration of breast-feeding in the last closed birth interval of ever-married women aged 15-49, by current age and level of education

Age group (years)	Median duration of breast feeding in months by level education		
	No education	≤ 5 years	5 years
1-19	18.1 (200)	20.0 ( 55)	12.8 ( 20)
20-24	23.7 (674)	23.7 (221)	17.8 ( 61)
25-29	23.8 (780)	23.9 (203)	18.2 ( 37)
30-34	23.9 (592)	23.5 (117)	23.8 ( 21)
35-39	23.9 (527)	24.2 ( 95)	*
40-44	23.9 (482)	24.0 ( 76)	*
45-49	23.9 (374)	24.1 ( 51)	*
All (4622)	23.8 (3628)	23.8 (819)	18.1 (175)

Figures in brackets denote the number of respondents.

Source: Bangladesh Fertility Survey Tape, 1976.

\* Fewer than 20 cases.

feeding which was shorter by about six months than that of those with five or fewer years of education, whereas women in the 25-29 age group with more than five years of education had a median duration which was shorter by about five months, than that of their counterparts with lesser number of years of education.

Table 5 shows that when the effect of level of education was controlled the median duration of breast-feeding for educated mothers was 18.1 months as compared to 23.8 months for uneducated mothers. If their childhood residence was considered, the median duration of breast-feeding for educated mothers with an urban background was about eleven months shorter than that of their uneducated counterparts. Educated women whose husbands had an urban background breast-fed for a median duration of 11.8 months. On the other hand, uneducated women with husbands with an urban background breast-fed for a median duration of 18.5 months

TABLE 5

**Median duration of breast-feeding in the last closed birth interval of ever-married women aged 15-49, by current and childhood place of residence and education of parents**

Place of residence	Median duration of breast-feeding in months	
	Uneducated	Educated
<b>Current</b>		
Rural	23.8 (4141)	19.0 (116)
Urban	23.5 (307)	15.2 (59)
<b>Wife's childhood</b>		
Rural	23.8 (4303)	18.5 (128)
Urban	23.6 (141)	12.2 (47)
<b>Husband's childhood</b>		
Rural	23.8 (4291)	19.5 (137)
Urban	18.5 (114)	11.8 (37)
<b>Husband's education</b>		
Uneducated	23.9 (3599)	18.2 (26)
Educated	23.6 (760)	18.1 (149)
<b>All (4623)</b>	<b>23.8 (4448)</b>	<b>18.1 (175)</b>

Figures in brackets denote the number of respondents

Source: Bangladesh Fertility Survey Tape. 1976.

The effect of the wife's education may have been modified by the husband's educational level, as most of the wives were dependent on their husbands. Table 5 also shows the median duration of breast-feeding by the husband's educational level. The median duration of breast-feeding of educated women with uneducated husbands was about five months shorter than that of uneducated women with uneducated husbands. Further, educated women with educated husbands breast-fed for a median duration of 18.1 months, whereas, uneducated women with educated husbands breast-fed for a median duration of 23.6 months. From the above findings it can be concluded that the husband's level of education does not have any significant effect on the duration of breast-feeding.

Table 6 shows the median duration of breast-feeding by method of contraception used during the last closed birth interval. It shows that users of modern methods such as the pill, condom and IUD, breast-fed for a slightly shorter median duration than non-users and other method users. This could be because of an awareness of the side-effects of modern methods, or because those women who used modern methods had already attained their desired family size. They may not be sure about the fertility reducing effect of breast-feeding, and therefore, instead of breast-feeding for a longer time they may have used modern contraceptives. Another interesting finding from Table 6 is that the median duration of breast-feeding for users of methods other than the modern ones, such as the pill, condom or IUD, was slightly more than that for non-users and modern method users.

TABLE 6

**Median duration of breast-feeding in the last closed birth interval of ever-married women aged 15-49, by method of contraception used in the last closed birth interval**

Method used	Median duration in months
Modern methods	23 6 (102)
Other methods	24 0 (112)
No method	23 8 (4426)
All	23 8 (4640)

*Source* Bangladesh Fertility Survey Tape, 1976

### Summary and Conclusion

Breast-feeding is universal in Bangladesh, with almost 98 per cent of

mothers breast-feeding their penultimate children from birth. The mean and median durations of breast-feeding in Bangladesh were 22.2 and 23.8 months respectively.

Maternal age did not have any significant effect on the duration of breast-feeding. The only pronounced differential in the median duration of breast-feeding existed between mothers aged below and over 20, probably because of the high rates of infant mortality among young mothers. No marked variation in the median duration of breast-feeding was seen among mothers upto parity nine. For parity ten and above the median duration of breast-feeding was reduced to 18.1 months

Urban women breast-fed for a reasonably shorter median duration than rural women. The median duration of breast-feeding in urban areas was 18.4 months, whereas in rural areas it was 23.8 months.

Mothers with five or more years of education showed a significant negative effect on the duration of breast-feeding, the duration being about five months shorter than that of mothers with five or fewer years of education and of mothers with no education. Both in urban and rural areas, education had a negative effect on the duration of breast-feeding. The level of education of the husband did not seem to have any independent effect on the duration of breast-feeding. Modern contraception had a marginal effect on the duration of breast-feeding

This study has shown that breast-feeding is almost universal in Bangladesh, and its duration remains long. With improvements in education, urbanisation and industrialisation there are chances of a further breakdown of the traditional custom of prolonged breast-feeding. Without improvements in the health situation and in socio-economic conditions, women might become more modern in their infant feeding practices. The level of contraceptive use in Bangladesh is very low. The 1983 Bangladesh Contraceptive Prevalence Survey (CPS) found that only 13.8 per cent of the women or their husbands were currently using a modern family planning method<sup>8</sup>. A recent study in Bangladesh observed an infant and child mortality rate of 150 per thousand births<sup>9</sup>.

Without an increase in contraceptive use, a further decline in the duration of breast-feeding would increase the level of fertility and infant and child mortality under the present socio-economic situation. Therefore, programmes related to infant nutrition and supplementation should be formulated in such a way that the present pattern of breast-feeding continues in Bangladesh.

It was observed that mothers of the youngest age cohort (15-19) breast-fed for shorter durations than mothers of all other age cohorts. This is partly because of high infant and child mortality among these very young mothers, who may be less equipped to breast-feed their children. Attention should be

focussed on mothers of this age group. An appropriate environment for these mothers to establish and continue breast-feeding should be provided by the family, the community and the government at large.

There was some indication from the data that mothers who used modern contraception might breast-feed for a slightly shorter duration than mothers who did not use any form of contraception. But this should not be used to discourage family planning programmes, because breast-feeding is not a reliable form of contraception on an individual basis. Immediately after resumption of the first postpartum menstrual period, lactating mothers should be advised to use contraception. Various studies have noted the adverse effects of hormonal contraception on breast-feeding<sup>10-12</sup>. Therefore, lactating mothers should be encouraged to use non-hormonal contraception.

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# **LIVING STANDARDS, POVERTY AND HEALTH**

**MISS URMIL SHARMA +**

## **Introduction**

“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. It is measured by the dichotomy of the presence or absence of disease, but its positive status is commonly in relation to standards or norms set for the physiological characteristics of the human species. These two aspects, positive or negative, are a function of the environment in which the human organism survives. One of the important elements of the environment is the sustenance provided to the human body. The latter is affected by one's capacity to earn or to buy. Thus, poverty or richness exerts an influence on the health status, at macro or micro levels.

Malnutrition and poverty are concomitant with each other and have been the hall-mark of the Indian population during the last several centuries. Since the turn of the present century or even before that, famine and epidemics were common in one or the other part of the country, causing heavy loss of human life and low health status. This was reflected in high death rates and low expectation of life (Table 1). Since the attainment of independence, famines and epidemics have, by and large, been controlled or eliminated. However, malnutrition has been consistently a wide-spread phenomenon influencing the health status of the community at large. There is no reliable estimate of the incidence of malnutrition except in selected pockets of the country. An estimate of the population below the poverty line can itself be taken, as indirect evidence, as a minimal indicator of the prevalence of malnutrition.

## **Present Health Status**

The correlation between health status and malnutrition is an established fact and 46 per cent of deaths among children aged 0-5 years in India, are associated with malnutrition<sup>1</sup>. Eighty five per cent of children in the one to five age group suffer from malnutrition<sup>2</sup>. It precipitates infections, leading to mortality. Gastroenteritis among children (0-4 years) also continues to be

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TABLE 1

Expectation of life at birth and crude death rate, India: 1901-1981

Period	Expectation of life at birth	Crude death rate
1901 - 1911	22.9	42.6
1911 - 1921	20.1	47.2
1921 - 1931	26.8	36.3
1931 - 1941	31.8	31.2
1941 - 1951	32.1	27.4
1951 - 1961	41.3	22.8
1961 - 1971	45.6	19.0
1971 - 1981	54.1M 54.7 F	12.5

Source: Year Book 1985-86 Family Welfare Programme in India Department of Family Welfare Ministry of Health and Family Welfare Government of India p. 13

one of the leading causes of mortality. According to the Cause of Death Survey conducted by the Registrar General of India<sup>2</sup>, the percentage of deaths among children under four due to gastroenteritis (including diarrhoea) was 46.1 in 1985<sup>3</sup>. Anaemia and prematurity can be directly attributed to malnutrition. The former is the chief cause of maternal mortality (accounting for 23.1 per cent of the total maternal deaths) and the latter is the singular cause of death among infants, accounting for 41.4 per cent of deaths among them<sup>3</sup>.

Tuberculosis is a socio-economic disease, environmentally promoted. It is estimated that 1.5 per cent of the population suffers annually from tuberculosis of the lungs, spread evenly in both rural and urban areas of the country. Again, according to the Cause of Death Survey<sup>3</sup>, the percentage of deaths due to tuberculosis of the lungs of the total number of deaths, was 5.9 in 1985. However, the corresponding percentage was as high as 28.1 in the major cause-group 'coughs'.

### Poverty in Relation to Health Status

A measure of poverty is readily available in the per capita income calculated by the Central Statistical Organisation. Table 2 presents these estimates since 1975, along with estimates of death rates and infant mortality rates. These two vital rates are comprehensive indicators of the health status of a community.

**TABLE 2**  
**Income, death rate and infant mortality rate, 1975-1984**

Year	Per capita income in Rs (at 1970 - 71 prices)	Estimated death rate	Estimated infant mortality rate
1975	661.1	15.9	140
1976	649.5	14.7	129
1977	694.7	14.2	130
1978	717.0	14.2	127
1979	664.7	12.8	120
1980	699.5	12.6	114
1981	719.5	12.5	110
1982	721.0	11.9	105
1983	761.0	11.9	105
1984	771.5	12.5	104

*Source* Year Book, 1985-86, Family Welfare Programme in India, Department of Family Welfare, Ministry of Health and Family Welfare, Government of India, pp 76 & 125

It can be seen from Table 2 that the increase (15.7 per cent) in per capita income during 1975-84 is in contrast to 20.7 and 25.7 per cent decreases in the death and infant mortality rates respectively. The correlation coefficients are  $(-)$  0.78 and  $(-)$  0.68 respectively, which are both significant at a 5 per cent level. An increased negative correlation between per capita income and infant mortality leads to the interpretation that poverty affects the health of the infants to a greater extent.

Higher degrees of variation during the period in the latter two variables are significant and cannot be ascribed solely to the variation in the economic factor. Factors other than poverty have to be invoked to explain the differential variation. These factors may be related to political, social and environmental aspects. The state has become a welfare state since 1951, and developmental schemes, both economic and social, operated through all the Five Year Plans, are aimed at improving the living standards of the people.



Living standards and health, as a result have improved significantly. Specifically, female literacy has risen from 18.7 in 1971 to 24.1 in 1981. The population served by adequate and safe water supply has increased from 16.7 in 1970<sup>2</sup> to 53.9 in 1985 in the rural areas and by 1990 drinking water supply is expected to cover the whole population. Rural health services have

TABLE 3

**Selected indices of living standard and death and infant mortality rates in India**

State	Input variables			Output variables		
	Villages covered by rural roads (1983)*	Female literacy (1981)@	Per capita expenditure (public sector) (1982-83)+	Expectation of life at birth (1976-80)+	Estimated death rate (1984)**	Estimated infant mortality rate (1984)**
	(A)	(B)	(C)	(D)	(E)	(F)
<b>Group A</b>						
1 Kerala	100.0	65.0	40.0	65.5	6.7	29.0
2 Goa	90.0	48.0	146.7	NA	7.5	66.0
3 Punjab	97.0	33.7	38.1	62.8	9.5	78.0
4 Maharashtra	33.8	34.6	44.8	58.1	9.2	—
5 Chandigarh	100.0	59.0	NA	NA	3.7	62.7
<b>Group B</b>						
1 Madhya Pradesh	29.1	15.5	30.8	50.2	14.5	122.0
2 Uttar Pradesh	18.2	14.0	22.2	46.8	15.7	140.0
3 Rajasthan	16.2	11.4	55.3	52.5	13.6	108.0
4 Orissa	2.7	21.2	33.1	50.8	12.5	130.0

Sources: <sup>1</sup> Rural Development Statistics, 1983, National Institute of Rural Development, Hyderabad, 1983

@ Health Information of India, 1987 p.59.

+ Occasional Paper No 1 of 1985, Vital Statistics Division, Office of the Registrar General of India, pp. 8-17.

\*\* Health Information of India, 1986, pp. 37 & 73

also registered a tremendous increase: there were 8,496 primary health centre in 1986 as against 5,015 in 1970<sup>4</sup>. Transport and communications increased four-fold<sup>5</sup>. These trends in modernisation are bound to have a favourable impact on health status.

The effect of female literacy, transport and expenditure levels on death rate and infant mortality rate are presented in Table 3.

The negative association of female literacy and other selected indices of living standards with death and infant mortality rates, is clear from the table.

The correlation matrix in Table 4 shows high correlations between female literacy followed by percentage of villages covered by rural roads, with respect to the three output variables of death rate, infant mortality rate and expectation of life at birth. These correlations are significant at a 1 per cent level.

TABLE 4  
Correlation matrix

	D	E	F
A	- 0.8402*	- 0.8973*	- 0.9032*
B	- 0.9423*	- 0.9072*	- 0.8991*
C	- 0.5115*	- 0.4735*	- 0.4050*

\* Significant at 1% level

(A) Per cent of villages covered by rural areas

(B) Female literacy

(C) Per capita expenditure

(D) Expectation of life at birth

(E) Death rate

(F) Infant mortality rate

This is in consonance with the findings of the Survey of Infant and Child Mortality (1974)<sup>6</sup>. The higher the level of education of the mother, the lower the infant mortality. In the rural areas, the infant mortality rate among illiterate mothers was twice that among mothers who had received primary education and above<sup>7</sup>.

## Discussion

A considerable portion of the achievements in health status can be attributed to social change and economic development. Promotive aspects nutrition, communication, water supply and sanitation and the adoption of

certain patterns of behaviour are of special importance to the maintenance of health. The development of health standards in more developed countries vouchsafe the same.

In spite of the large increase in curative facilities, they play a marginal role not only on account of their poor accessibility and utilisation, but also due to morbidity patterns. Rural morbidity as indicated by new cases treated in the primary health centres or dispensaries, consists mainly of respiratory infections, water and food-borne diseases and nutritional diseases with case fatality ranging from 2.3 to 5.0. In his study on secondary data in relation to decline in mortality in India, Krishnan<sup>8</sup> opined that the decline in mortality was not entirely due to an improvement in health structure but also due to economic and social changes, particularly literacy. A similar opinion has been expressed by Banerjee<sup>9</sup>

Promotion of better nutritional standards and improvement in environmental conditions can be discerned. The Integrated Child Development Scheme initiated in 1975 with a view to improving nutrition, health and education of children, mothers and pregnant women, delivers these services to the local people through members of their own community. Maternal mortality, which is probably a sensitive indicator of environmental conditions to which families are subjected, has dramatically fallen in India. In 1951, it was estimated as 22 per 1000 live births and in 1982 it was 4.6. Likewise, post neo-natal mortality, which is exogenous, is intimately related to socio-economic factors arising from adverse environmental conditions: in 1968, it was 64.0 as against 44.6 in 1980<sup>10</sup>. The age specific mortality rate of children under four years of age also decreased from 48.3 in 1978 to 41.8 in 1980<sup>11</sup>

### **Alma Ata Declaration**

There is an need for the implementation of programmes for balanced development in which health constitutes one of the elements. The approach of primary health care endorsed at the Alma Ata Conference in 1978 is the most suitable strategy for the attainment of Health for All. This approach is applicable to all countries, rich and poor, and with varying social and cultural backgrounds. Its minimum eight essential components which constitute the bulk of promotive services are:

1. Education of people about health problems and methods of preventing and controlling them;
2. Promotion of food supply and proper nutrition;
3. Adequate supply of safe water and basic sanitation;
4. Immunisation against major infectious diseases;
5. MCH and family planning;

6. Prevention and control of locally endemic diseases;
7. Appropriate treatment of common diseases and injuries;
8. Provision of essential drugs.

By definition, primary health care moves away from vertical programmes to those controlled by the community. Community participation is itself activated by the scheme for health workers chosen from within the community. It may be recalled that the Health Guides scheme was started in India in 1978 and training of village dais in 1972.

With increasing living standards, a decline in the death rate and hence, improvements in health standards, are likely to continue, contrary to the opinion expressed by Gwatkin<sup>12</sup> that death rates have reached a plateau in all developing countries. Caldwell<sup>13</sup> on the other hand, has cited a few examples of developing countries which have achieved a breakthrough. While analysing the factors responsible for Kerala's breakthrough, he mentioned social and cultural factors: the personal hygiene of the people of Kerala, complete immunisation of children, accessibility of health services, and low levels of severe malnutrition were the main factors responsible for its lowest death rate among other Indian states. He infers: "What is clearest is that low mortality will not come as a spin-off of economic growth. Certainly this is where Government intervention is effective. ..."

Poverty, although related to health, cannot be a serious deterrent or hindrance to better standards of health, thanks to state interventions. It is conceded that the delivery of health services especially in the rural areas, is lop-sided. The health services system in India is an expression of socio-economic inequalities; inequalities in access, participation, and health status<sup>14</sup>. With increasing education especially among women and the generation of health consciousness, the demand for health services is bound to increase and the existing inequalities may get levelled off.

## Conclusion

Consequently, one cannot escape the conclusion that state intervention should be rendered intensive and cost-effective. Further increases in allocation for health and family welfare and education are warranted. Health planning should also translate the concept of inter-sectoral coordination into a living reality. One need not wait for economic growth. Rather, improvement in other living standards should be emphasised.

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# **MONITORING A RURAL HEALTH PROGRAMME: AN EXPERIENCE IN VADU RURAL HEALTH PROJECT, MAHARASHTRA**

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## **Introduction**

The Vadu Rural Health Project is basically a primary health care project. The project which started in January 1977, covers an estimated population of about 37,000 (mid-year 1985) spread over 22 villages around the Pune-Ahmednagar state highway near Pune in Maharashtra, India. It endeavours to provide primary health care to the population in these villages through paramedical personnel appointed by the Pune Zilla Parishad, who are technically supervised and guided by the K.E.M. Hospital, Pune, through a rural hospital established in Vadu Block, within the project area. A team of trained workers has been built up through continuous, systematic training and retraining in the philosophy and concepts of primary health care. Except for certain specialised services in the fields of ophthalmology, E.N.T., paediatrics, gynaecology and orthopaedics offered by the consultants of the K.E.M. Hospital, the project basically provides the same services as a normal Primary Health Centre, but in a more systematic manner and with a more humane approach.

## **Main Features of the Project**

### *Systematic Documentation and Physical Verification of Service Output*

Apart from the various public health services rendered through the primary health care approach, the project has a good documentation system of recording the details of all its beneficiaries as well as of the services rendered to them in a set of registers maintained at the village and sub-centre levels. These registers are regularly checked by the field level supervisor for authenticity and reliability of their contents. The registers at the village level and at the sub-centre level are also matched periodically to ensure complete documentation of events occurring or of the services rendered in the village. The various registers which are uniformly maintained in each village or sub-centre allow for the classification or registration of events occurring to residents

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or non-residents within or outside the village according to a uniform concept. Such a procedure of recording of events facilitates a more detailed demographic analysis of the project area, based on reliable data. Through supportive supervision and continuous guidance, under-recording of the events in a village is reduced to the minimum while at the same time, the tendency to make "ghost" entries in the registers is almost 100% checked through frequent random physical checking of the events recorded in the registers.

### *Reliability of Progress Reports*

The monthly progress reports of performance prepared by the sub-centre public health workers use the village or sub-centre level registers of service outputs as their base. As such, the achievements reported by the workers having withstood the test of physical verification are reliable.

### *Checking Monthly Progress Reports for Consistency*

The monthly progress reports collected in the prescribed forms from the sector level (i.e. sub-centre level) health workers are checked at the monthly meetings, for consistency of figures in the light of norms such as the number of ante-natal cases per 1000 population, expected births per 1000 population, infant deaths per 1000 live births, immunisation vis-a-vis de jure births, etc. Mistakes such as still births misclassified as infant deaths or vice-versa, and inconsistencies in the number of patients of communicable diseases (such as T.B., leprosy) etc. are corrected.

### *Performance Assessment by Monthly Activity-wise Indices for each Village*

Performance under different health activities have different dimensions. While some activities depend directly on the efforts and hard work put in by the health workers, most other activities depend on the people's participation and their attitude and/or acceptance of preventive health measures taught to them through the public health programme. The performance varies from village to village and from one activity to another, depending upon the involvement of the rural community and on the success of the team of health workers (that is, the Multipurpose Workers(MPWs), Auxiliary Nurse Midwives (ANMs), and Community Health Guides (CHGs) at the sub-centre level in developing rapport with the community and gaining their confidence. The MCH performance in one village during a particular month may be good, but for other public health activities it may be lower than expected. Again, in another village, in the same month, the MCH performance may be below expectation, while it may be relatively good as far as family planning and registration of vital events are concerned.

Monitoring in a proper perspective demands a relative assessment of the performance in project villages and sub-centres under different activities as well as for all activities together in general. Also, the performance under any activity varies from village to village according to the size of the village. For a relative comparison, it has to be considered in terms of its ratio to the village population or to other related characteristics of the village. Such ratios are then comparable irrespective of the size of the village and are the direct indicators of the efforts of the public health team or of the participation of the village community in the health activity in question. The sum total of such ratios with due weightage to their priorities in health programmes, in the form of a composite index number, would give an assessment of the 'total' performance in the village. Such 'indices' or ratios for each of the selected activities and a "Composite Index" for all the activities together were worked out every month, for each village under the Vadu Rural Health Project.

### *Twelve-monthly Moving Totals of Performance Indices*

Indices of performance under different activities are worked out every month corresponding to the twelve-monthly moving total. In other words, the indices for the month ended September 1985 are based on the total performance during the period October 1984 to September 1985, and those for October 1985 on the total for November 1984 to October 1985, and so on. The twelve-monthly moving totals smoothen seasonal fluctuations in performance with respect to certain activities such as coverage under family planning activities, registration of births, detection of fever cases, etc. Apart from this, the twelve-monthly moving total facilitates an assessment of performance in relation to general expectations which are not the same as annual targets for the corresponding activity. Weighted composite indices are then worked out as per the scoring pattern given in Appendix I and the villages are ranked on the basis of their composite index in the format given in Appendix II. The indices are, in a way, a projection of the real situation in a village at the end of the month for which they are worked out and hence help reveal the areas and/or activities which require greater attention from the project staff in order to maintain the tempo of work to achieve the long term goal.

## **Results**

### *Ranking of Indices to Indicate Needy Areas*

As already stated above, the ranking of villages on the basis of the composite index and the value of the index which ranges from 0 to 100 suggest which villages need to be given more attention to improve their performance.



Villages with an index below 50 call for the attention of the supervisory staff while those with an index below or around 40 for three consecutive months, require the immediate attention of the Project Director. Normally this happens when the sector level health worker is absent (or the post is vacant), or the worker is lethargic, or finds it difficult to elicit the cooperation and participation of the community. The composite indices of villages Bakori and Dongargaon from Lonikand Sector and Vadu Kh. and Tulapur from Fulgaon sector, which varied between 40 to 46 in the first half of 1984 improved to as much as 60 or more in the latter half of 1984 and thereafter after the appointment of an ANM in mid-1984 at Dongargaon, who looks after Bakori also. The Project Director had to persuade the Zilla Parishad for a long time to get the post of the ANM filled at the first instance and then to get a better replacement because the one appointed earlier could not get the cooperation of the people.

#### *Unbiased Performance Assessment*

That the indices used provide an unbiased assessment of the performance of the villages is evident from the fact that two villages namely, Pimpale Jagtap and Bhavandi, consistently ranked first or second on the basis of their composite index number. However, these villages were not considered as villages with the best performance prior to this exercise of monitoring performance on the basis of indices. In fact, the villages Lonikand and Fulgaon which ranked sixth or lower were then considered to be in the forefront.

#### *Assessment of the Performance of the Health Team*

Since the villages are ranked by a set of performance indices for various activities, the rank reflects the performance of the entire team of health workers, namely the male and female CHGs and the male and female MPWs of the corresponding village. For consistent good work in any of the villages, the entire health team of those villages receives appreciation. As such, this system of assessment of performance at the village level helps create a healthy and cooperative atmosphere among the entire team of health workers of the village.

#### *Pinpointing Areas Needing More Attention and Taking Action*

As compared to 1984 the performance of villages Tulapur, Vadu Kh., Perne, Bakori, Dongargaon, Jategaon Kh. and Shikrapur improved significantly in 1985, while that of villages Aпти and Jategaon Bk. deteriorated. The rest of the villages maintained the same level of performance. Special attention was given to these villages which showed an improvement in the latter

half of 1984 especially in the areas of MCH and immunisation. While the backlog of immunisation of children/mothers was covered in these villages through special squads, the backlog in the registration of ante-natal cases and their further care especially in wadis/wastis, was completed through the special efforts of the respective MPWs/ANMs, and the tempo of work was maintained thereafter.

### *Indices Represent Core Activities*

Although only a few of the various activities under different fields such as Family Planning, MCH, Immunisation etc., were selected for working out the indices, they form the real core activities of the primary health care programme in which there is a direct contribution from the primary health workers and from people's participation. As such, the indices are representative of the level of performance under the primary health care programme in the project area.

### *Assessment of Project Performance vis-a-vis Expected Achievements*

Although no targets are given to the primary level health workers in the project area in order to depart from the normal target-oriented work attitude, the pooled performance of the project area as a whole (for all the villages) is assessed every month in relation to the expected achievement. The expected achievements are decided with reference to the long term objectives which are then split on a pro-rata basis for the periods upto the end of the month under review. The performance is reviewed or assessed every month in the format given in Appendix III. The percentage of actual achievement to the expected (on a pro-rata basis) upto the end of a month together with the village-wise indices of performance under different fields of activity (such as family planning, MCH, immunisation etc.) including the registration of births/deaths/infant deaths provide an excellent tool for monitoring unbiasedly, the progress of primary health care activities in the project area. Since the achievements reported by the primary level health workers are well documented in a set of registers at the village/sector levels, and are further physically verified independently by the field investigator, the monitoring is based on well-documented and reliable data—a positive point in favour of the monitoring system followed in the Vadu Rural Health Project.

### *Monitoring System of Vadu Project Differs from that of PHCs*

1. The monitoring system followed for the Vadu Rural Health Project is unique.
  - i) The villages are ranked on the basis of indices of achievement

with reference to long term objectives in terms of ultimate impact;

- ii) the reported figures of achievement are well documented at the village level and are physically verified, independently, for their reliability;
- iii) the method followed does not bog down the primary level health workers to annual targets thereby expecting quality of work; and
- iv) ranking of villages reflects the extent of good team work done by the primary level health workers and inculcates a spirit of competition and team work among workers.

2. Owing to the independent physical verification of the reported achievements, there is reliability in the reports and hence the claims or interpretations made on the basis of the indices of achievements can be relied upon.

3. The area-wise and activity-wise indices pinpoint activities or areas requiring more attention from the project's supervisory staff for immediate action because the indices for each month are worked out within the first week of the following month for the benefit of project staff. Further, deficiencies in the work are discussed at the monthly meetings of primary level health workers in order to decide the action to be taken to cover them up in the following month.

4. As a result of the reliability in the reported achievements, the indices project the actual situation of the primary health care activities in different villages.

5. The monthly village-wise and activity-wise indices together with the procedure of reviewing the progress with reference to the project's long term objectives (in terms of general impact—refer Appendix III) every month, provide an unbiased tool for assessing the work being done in different villages/sectors of the Vadu Rural Health Project.

## **Conclusion**

With the method of monitoring which was introduced late in 1983 it has been possible to identify, unbiasedly, the areas and activities requiring greater attention from the project's supervisory staff and the action taken accordingly does help to improve the coverage in those areas or activities.

## ACKNOWLEDGEMENTS

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## APPENDIX I

## Ranking of Villages/Sectors on the Basis of Performance Norms/Scoring Pattern

## A. Family Planning.

1 Sterilisation Equivalent as per cent of total eligible couples.	a) 2 marks per per cent upto 15% b) 30 marks for above 15%	30
---	---	----

## B MCH.

1. No of ANC's registered per 1000 population	a) 0.15 marks per unit of ratio upto 40 b) For ratio above 40, 6 marks	6
2. Percentage of ANC registration before 16 weeks.	a) 0.06 per per cent	6
3 Percentage of home deliveries conducted by ANM/trained Dai in last 12 months.	a) 0.1 mark per per cent upto 60% b) Above 60%, 6 marks	6
4. Percentage of home deliveries with delivery pack	a) 0.06 marks per per cent	6
5 ANC's fully immunised (ANC with primipara receiving 2 doses + multipara receiving booster) total ANC registered	a) 0.075 marks per per cent upto 80% b) Above 80%, 6 marks	6

## C Immunisation.

1. 3rd dose of DPT as per cent of total births (de jure)	a) 0.03 marks per per cent b) Above 100%, 3 marks	3
2. 3rd dose of polio as per cent of total births (de jure)	a) 0.03 marks per per cent b) 3 marks per per cent above 100%	3
3 1st dose of DT as per cent of population in age group 3-5 years	a) 0.05 marks per per cent upto 40% b) 2 marks above 40%	2
4. 2nd dose of DT as per cent of population aged 6-8 years	a) 0.05 marks per per cent upto 40% b) 2 marks for above 40%	2

**D. Malaria**

- |   |                            |   |
|---|----------------------------|---|
| 1. Percentage of slides to total fever cases detected | a) 0.05 marks per per cent | 5 |
| 2. Percentage of +ve cases treated with RT            | b) 0 05 marks per per cent | 5 |

**E Diarrhoea**

- |   |                            |   |
|---|----------------------------|---|
| 1. Percentage of affected children treated with ORT packets | a) 0.05 marks per per cent | 5 |
|---|----------------------------|---|

**F. Vital Statistics**

- |  |  |   |
|--|--|---|
| 1. Total births (R+RO+NR) recorded per 1000 population | a) 0.125 marks per unit upto 40<br>b) 5 marks for ratio above 40           | 5 |
| 2 Total deaths (R+RO+NR) recorded per 1000 population  | a) 0 333 marks per unit upto 15<br>b) 5 marks for ratio above 15           | 5 |
| 3 Total infant deaths (R+RO+NR) live births            | a) 0 05 marks per unit of ratio upto 100<br>b) 5 marks for ratio above 100 | 5 |

Total marks	<hr/> 100
-------------	-----------



## APPENDIX II (Contd.)

Indices of Relative Performance of C.H.Vs/M.P.Ws in Vadu Rural Health Project during \_\_\_\_\_

Malaria Programme			Diarrhoea Programme	
blood smears collected		% of positive cases treated with R.T.		% cases treated with O.R.T.
Ratio	Score	Ratio	Score	
22	23	24	25	26
				27

Vital Statistics						Overall performance	
Total births regd. per 1000 population		Total deaths regd. per 1000 population		Infant deaths regd. per 1000 births		Total Score	
Ratio	Score	Ratio	Score	Ratio	Score		
28	29	30	31	32	33		

## APPENDIX III

## Performance upto the end of 1985 and 1984

Item	Performance upto 1985			Performance upto 1984			Basis for expected achievements (on pro rata basis)
	Actual	Expected	%	Actual	Expected	%	
1	2	3	4	5	6	7	8
<b>A. Family Planning</b>							
1 Tubectomies		A B			A B		ECEP* rate (1984) 40.7% ECEP* rate (1985) 43.2% projected
2. Vasectomies		A B			A B		Target pattern for 1985
3. Acceptors of		A B			A B		A B Tubectomy 306 200 Vasectomy 17 4 Cu-T 177 376
b) Nirodh c) Pills							
<b>* B. Mother &amp; Child Health</b>							
1. No of ANC's registered (R+RO+NR)							47 per 1000 population in a year
2. No. of primi-para in II(1)							25% of total ANC's
3 No. of ANC's registered within 16 weeks of pregnancy							R+RO ANC's i.e. 35 per 1000 population in a year



# APPENDIX III (Contd )

## Performance upto the end of 1985 and 1984

Item	Performance upto 1985			Performance upto 1984		%	Basis for expected achievements (on pro rata basis)
	Actual	Expected	%	Actual	Expected		
1	2	3	4	5	6	7	8
4. No. of "High Risk" ANCs registered (R+RO+NR)							33% of total ANCs
5. ANCs immunised against TT i) 1st Dose ii) 2nd Dose iii) Booster Dose Coverage (a) 1st Dose + Booster b) 2nd Dose + Booster							100% of ANCs (R+RO+NR)  75% of ANCs in 1985 70% of ANCs in 1984
6. No. of primipara who are given 2nd dose of TT							
7. No. of FS tablets distributed to ANCs							90 tablets per ANC (R+RO+NR)
8. Total deliveries conducted within project area of which							De facto birth rate i.e. 26.5 per 1000 population

## APPENDIX III (Contd.)

## Performance upto the end of 1985 and 1984

Item	Performance upto 1985			Performance upto 1984			Basis for expected achievements (on pro rata basis)
	Actual	Expected	%	Actual	Expected	%	
1	2	3	4	5	6	7	8
i) Institutional							15 % of total deliveries within project area
ii) Domiciliary							85 % of the deliveries
9. Of the home deliveries							
i) by ANM/ Doctor							} 15 % of home deliveries
ii) by Trained Dai							
iii) by Untrained Dai							} 85 % of home deliveries
iv) by Relative/ Self							
10 No of pre-sterilised delivery packs							100% of home deliveries
i) distributed							75 % of home deliveries in 1985
ii) used							70 % of home deliveries in 1984

## APPENDIX III (Contd.)

## Performance upto the end of 1985 and 1984

Item	Performance upto 1985		%	Performance upto 1984		%	Basis for expected achievements (on pro rata basis)
	Actual	Expected		Actual	Expected		
1	2	3	4	5	6	7	8
<b>C. Immunisation</b>							
1 B.C.G.							
i) Within 1 year							
ii) Between 1-2 years							7 1% of the population
2 D.P.T							
i) 1st Dose							
ii) 2nd Dose							
iii) 3rd Dose							Total de jure births
iv) Booster Dose							
3 Polio							
i) 1st Dose							
ii) 2nd Dose							
iii) 3rd Dose							Total de jure births
iv) Booster Dose							
4. D.T.							
i) 1st Dose							7.3% of the population
ii) 2nd Dose							7.9% of the population
iii) Booster Dose							
5 Vit.A Doses No. of children							

## APPENDIX III (Contd.)

## Performance upto the end of 1985 and 1984

Item	Performance upto 1985			Performance upto 1984		%	Basis for expected achievements (on pro rata basis)
	Actual	Expected	%	Actual	Expected		
1	2	3	4	5	6	7	8
<b>D. Communicable Diseases</b>							
1. <i>Malaria</i>							
i) Fever cases detected							
ii) Fever cases treated with Chloroquine							
iii) Blood smears taken							7 per 1000 population
iv) Positive cases detected							
v) Positive cases treated with RT							100% of +ve cases
2 <i>T.B.</i>							
i) Total no of patients							
ii) New patients during the year							
iii) Old patients							
iv) Patients taking medicines regularly							

## APPENDIX III (Contd.)

## Performance upto the end of 1985 and 1984

Item	Performance upto 1985			Performance upto 1984		%	Basis for expected achievements (on pro rata basis)
	Actual	Expected	%	Actual	Expected		
1	2	3	4	5	6	7	8
v) Patients taking medicines irregularly							
3. <i>Leprosy</i>							
i) Total no. of patients							
ii) New patients							
iii) Old patients							
iv) Patients taking medicines regularly							
v) Patients taking medicines irregularly							
4. <i>Diarrhoea</i>							
i) Children affected							
ii) Children treated with ORT							

## APPENDIX III (Contd.)

## Performance upto the end of 1985 and 1984

Item	Performance upto 1985			Performance upto 1984			Basis for expected achievements (on pro rata basis)
	Actual	Expected	%	Actual	Expected	%	
1	2	3	4	5	6	7	8
<b>E. Registration of Vital Events</b>							
1. <i>Births</i>							
i) Total births recorded (R + RO + NR)							46.7 per 1000 population
ii) Resident							R + RO births = 32 per 1000 population
iii) Resident outside							
iv) Non-residents							R + NR births = 26.5 per 1000 population
2. <i>Deaths</i>							
i) Total deaths recorded (R + RO + NR)							9.8 per 1000 population
ii) Resident (R)							De jure deaths = 8.8 per 1000 population
iii) Resident outside (RO)							
iv) Non-resident (NR)							De facto deaths = 9.2 per 1000 population
3. <i>Still Births</i>							16.0 per 1000 live births

**APPENDIX III (Contd.)**  
**Performance upto the end of 1985 and 1984**

Item	Performance upto 1985			Performance upto 1984		%	Basis for expected achievements (on pro rata basis)
	Actual	Expected	%	Actual	Expected		
1	2	3	4	5	6	7	8
<b>4. Infant Deaths</b>							
a. i) Total infant deaths recorded (R+RO+NR)							
ii) Resident (R)							32.2% of total deaths
iii) Resident Outside (RO)							30.7% of de jure deaths
iv) Non-resident (NR)							28.2% of de facto deaths
b. i) Early neo-natal (Total)							44.3% of total infant deaths
ii) Late neo-natal (Total)							23.5% of total infant deaths
iii) Post neo-natal (Total)							32.2% of total infant deaths
<b>F. Environmental Sanitation</b>							
1. No. of wells disinfected							
2. No. of latrines constructed							
3. No. of kitchen gardens raised							
4. No of gobar gas plants erected							
5. No. of soak pits dug							

\* BCEP = Eligible couples effectively protected

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# **PATTERN OF IUD USE: A FOLLOW UP OF ACCEPTORS IN MYSORE**

**MRS. K. PRABHAVATHI +**  
and  
**MR. A. SHESHADRI ++**

## **Introduction**

The family planning programme in India has increasingly been stressing the promotion of non-terminal methods. As such, during this decade, there has been an impressive increase in the number of acceptors of such methods as IUDs, oral contraceptives and condoms. Similarly, in the programme of the Family Planning Association of India, there has been an increasing trend towards spacing methods—in 1987, as many as two-thirds of all new acceptors adopted non-terminal methods<sup>1</sup>. While the levels of use of non-terminal methods are well documented, the pattern of their use has not been systematically assessed. Of specific concern is the quality of utilisation of these temporary methods, that is, the extent to which they are effective, the rate at which they are discontinued and the complaints and side-effects associated with their use. This study addresses itself precisely to this issue among a sample of IUD acceptors in Mysore.

There are three specific objectives of this study. First, the study traces patterns of communication, motivation and decision making in IUD acceptance, including a look at perceived family size preferences, both in terms of numbers and timing and its effect on IUD acceptance. Second, such aspects of IUD utilisation as continuation, failure and retention and expulsion rates are assessed and their reasons ascertained. A third objective is to study the effectiveness of follow up services.

## **Data**

This paper reports the results of a retrospective follow up survey of 400 women who had IUDs inserted during the period 1983-86. All acceptors had been recruited by the Mysore Branch of the Family Planning Association of India. Interviews were conducted during 1986-1987, that is, between nine months and four years following initial IUD insertion. Relevant information regarding the respondents under study was obtained from records maintain-

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ed by the Association. Interviews were conducted by female investigators, at the residence of the acceptor. As is the case with many retrospective follow up studies, loss to follow up was high: out of the total of 844 women who had IUDs inserted during the period 1983-86, only 400 (47.4 per cent) were successfully interviewed and comprise the focus of this study. Another 37.8 per cent (N=319) had migrated out of the area—the area from which the sample is drawn tends to have a sizeable floating population, residing in unauthorised constructions on revenue sites. Another 14 per cent (N=118) were not traceable and the remaining (N=7) refused to be interviewed. The substantial proportion lost to follow up constitutes a serious bias, and raises questions regarding the validity and applicability of the results. In order to examine the extent to which the proportion lost to follow up differed from those who were successfully interviewed, socio-economic and demographic characteristics of each group, recorded at the time of IUD insertion were compared. No significant differences were found in such attributes as age, parity, education, income and religion. As such, we have assumed that the conclusions drawn from this study could be generalised to all acceptors registered during the period 1983-86.

### Profile of the Sample

A breakdown of all new acceptors registered by the Mysore Branch of the Family Planning Association of India during these years by method accepted is presented in Table 1; the results suggest that sterilisation was by

TABLE 1

Family planning acceptors registered by FPAI Mysore Branch

Year	Sterili- sation	I.U.D.	Oral Pill	Condom	Total new acceptors
1983	917	201	18	112	1248
%	73.5	16.1	1.4	9.0	
1984	1156	322	141	269	1888
%	61.2	17.1	7.5	14.2	
1985	1389	364	138	179	2070
%	67.1	17.6	6.7	8.6	
1986	1251	315	152	280	1998
%	62.6	15.8	7.6	14.0	
*Karnataka 1985-86 (Provisional)	47.9%	23.7%	6.0%	22.4%	714281

\* Source: Family Welfare Programme in India, Year Book 1985-86.

far the preferred method; over three fifths of all acceptors opted to be sterilised. Among non-terminal methods, the IUD was the most popular—chosen by about one sixth of all new acceptors in each year of the period under study.

Table 2 presents the demographic profile of the sample. The age and parity distributions suggest that as many as half of all respondents were under 25 years, over two-thirds (68.3 per cent) had two or fewer children while 29 per cent had none or one child only. The mean age among respondents at the time of the survey was 25.2 years, while mean age at marriage was 19.1 years. In other words, the average respondent had accepted the IUD after roughly six years of marriage. On average, each acceptor had 2.2 children at the time of acceptance—1.05 sons and 1.17 daughters. It is clear that these respondents have accepted IUDs at relatively early stages of their potential reproductive periods.

TABLE 2

**Demographic profile of IUD acceptors: Percentage distribution of age at acceptance, age at marriage and parity at acceptance**

A	Age	At acceptance		At marriage	
	15-19	11.5		64.0	
	20-24	38.5		30.0	
	25-29	31.0		5.5	
	30-34	14.5		0.5	
	35-39	3.0		—	
	40-44	1.5		—	
Total		100.0		100.0	
(N)		(400)		(400)	
Mean		25.2		19.1	
B. Number of living children at the time of acceptance					
		Boys		Girls	
					Total
	0	27.3		27.5	1.0
	1	47.8		42.0	28.0
	2	19.0		20.5	39.3
	3	4.7		7.3	19.2
	4	1.2		1.7	7.5
	5+	—		1.0	5.0
Total		100.0		100.0	100.0
(N)		(400)		(400)	(400)
Mean		1.05		1.17	2.19

Table 3 presents the distributions of acceptors by such social characteristics as education, occupation, income and religion. The results

TABLE 3

Percentage distribution of respondents by selected social and economic characteristics of IUD acceptors: Education, occupation, income and religion

A. Education		Respondents	
Total		100.0	
No.		400	
Illiterate		16.5	
Some Primary (I-IV)		5.5	
Some Middle (V-VII)		21.2	
Secondary (VIII-X)		38.3	
Pre-University Course/Diploma		8.5	
Graduate		8.2	
Post-Graduate		1.0	
Professional degree		0.8	
B. Economic Activity		Respondents	Husband
Total		100.0	100.0
No.		400	400
Non-agricultural daily wage labour		1.3	19.5
Industrial worker		—	11.5
Clerical		4.3	42.5
Self-employed petty business		5.5	19.8
Professional(including teachers)		3.5	3.5
Housework		85.2	0.2
Other		0.2	3.0
C. Income (monthly, in Rs.)		%	
Total		100.0	
No.		400	
Less than 500		26.5	
501-1000		42.8	
1001-1500		13.3	
1501-2000		9.0	
2001-2500		1.0	
2501+		4.7	
Not stated		2.7	
D. Religion		%	
Hindu		78.5	
Muslim		18.0	
Christian		3.5	

suggest that IUDs are chosen by women who have had more than average levels of education: as many as 83.5 per cent of this sample have had some formal education. The modal level of education, both among women and their husbands, is high school. This may be compared roughly with the female literacy rate of 47.8 per cent recorded for urban Karnataka in the 1981 census<sup>2</sup>.

The occupational and income distributions similarly suggest that IUD acceptors are of relatively high socio-economic status. Results indicate that a large proportion of husbands of acceptors had clerical jobs (42.5 per cent), while as many as 20 per cent of husbands were daily wage earners or self employed businessmen. The occupational distribution of women on the other hand, indicates that as many as 85 per cent were housewives.

The distribution of the sample by religion shows that 78.5 per cent were Hindus, 18.0 per cent were Muslims and 3.5 per cent were Christians. The religion-wise distribution of the area is roughly similar: according to the 1981 census, Hindus, Muslims and Christians comprise 82.7 per cent, 11.2 per cent and 2.6 per cent of the area's population respectively. Of interest is the relatively high acceptance levels among Muslims. The results suggest that, contrary to popular belief, the level of IUD acceptance among the Muslim population is in fact somewhat higher than would be warranted by its share of the population.

### **Factors influencing the acceptance of IUD**

In order to assess the factors contributing to the acceptance of IUD, the questionnaire covered such aspects as the source of motivation, attitudes of other family members towards contraception, and knowledge of the advantages and disadvantages of the IUD, and of other methods prior to IUD acceptance. Table 4 reports the results.

Sources of motivation ranged from doctors to field workers, to family and friends, to the respondent herself. About 45 per cent of all acceptors had been motivated by field workers—a third (34.3 per cent) by FPAI field workers and the rest by Government field workers. In addition, a large proportion (22.7 per cent) was self-motivated, suggesting that over one fifth of the population has reached a stage of awareness at which informed decisions regarding contraception are made independently. Other sources of motivation included doctors (reported by 19.5 per cent), relatives, friends or husband (reported by 11.5 per cent) and others (reported by 2 per cent).

Attitudes of family members of acceptors towards contraception tend by and large to be positive. Only nine respondents (2.5 per cent) had faced any opposition from household members. However, anticipating opposition, as many as 38 women, that is almost ten percent, chose to keep their IUD

acceptance confidential even from their husbands. In all, however, the results suggest that approval of IUD acceptance among family members is an important factor motivating its acceptance: as many as 88 per cent of all acceptors reported favourable attitudes among family members.

TABLE 4

## Factors influencing the acceptance of IUDs

A. Source of motivation	%
Doctor	19.5
Field Worker—Govt.	10.0
Field worker—FPAI	34.3
Relative/Friends/Husband	11.5
Self motivated	22.7
Others	2.0
B. Attitudes towards IUD acceptance	
(a) % facing opposition from family members	2.5
% facing opposition from husband	1.0
% facing opposition from in-laws	1.5
(b) % keeping IUD acceptance confidential from their families	9.5
C. Knowledge of advantages and disadvantages	
at time of acceptance	
were told of only advantages	78.5
were told neither	0.5
were told both advantages and disadvantages	21.0
D. Awareness of alternative methods of contraception at time of acceptance	
Yes	37.2
No	62.8
E. Preferred family size	
1	5.5
2	68.7
3	21.0
4	4.8

The results suggest that, though the programme claims to follow the cafeteria approach in which the potential acceptor is informed of all methods

and is expected to make an informed decision, in reality this was not the case. The motivator appears to have stressed the method she or he felt was most appropriate for the particular acceptor and provided her with only partial (positive) information on the method. Knowledge of the full range of methods available to the acceptor tended to be either entirely lacking or severely limited.

With regard to prior knowledge of the advantages and disadvantages of the IUD, the results suggest that information provided to potential acceptors tended to be somewhat biased in favour of its positive aspects: only about one fifth (21 per cent) were aware of both advantages and disadvantages. As many as 78.5 per cent were aware only of the advantages. This incomplete knowledge of the disadvantages seems to be related with early discontinuation, as will be discussed later. These results underline the need to involve the potential acceptor more comprehensively in the decision making process.

### **Acceptors' views on family size**

The acceptance and continued practice of any method of contraception depends not only on such obstacles to its use as incomplete information and negative attitudes, but also on the acceptors' views on ideal family size and spacing. The results show that on average, an acceptor considers 2.25 children ideal; the large majority want two children (69 per cent). Acceptors were also asked the ideal interval between births; over half (52.5 per cent) suggested three years, which is in keeping with the interval prescribed as ideal by most health workers. As many as 40.8 per cent however, considered four years as ideal. Family size preferences and preferred birth intervals can themselves have acted as powerful factors motivating the use of the IUD. That the IUD is used for spacing purposes may be inferred by the fact that while only 5.5 per cent of the sample wants fewer than two children, as many as 29 per cent of women with fewer than two children have adopted the IUD. Nevertheless, a comparison of the actual (Table 2) and preferred family size (Table 4) suggests that the IUD is also likely to be used in lieu of a terminal method, that is, with the intention of limiting (rather than spacing) further pregnancies.

### **Continuation, failure and removal**

Method failure refers to pregnancies occurring despite the use of the IUD. A review of the literature suggests that method failure rates tend to lie in the range of 1-2 per cent at 12 months. The results of this study fall well within this range (see for example reference nos. 3 and 4). Table 5 shows that of the 400 respondents in this study, a total of six subsequently became

pregnant. This implies a crude failure rate of 10.0 per 1000 at six months, 12.5 at 12 to 30 months and 15.0 per 1000 thereafter. Life table failure rates are similarly low. Net rates, which also take into consideration attrition from other causes such as removal, expulsion and truncation, range from .0100 at six months to .0125 at twelve months and .0195 by 30 months. Gross failure rates, which exclude discontinuation for any reason other than failure, range from .0111 at six months to .0142 at twelve months to .0289 at 30 months. Failure rates observed in this study lie within the range reported by other studies.

TABLE 5

Failure, removal/expulsion and continuation rates: IUD acceptors

	Life table rates		
	Failure	Removal/ Expulsion	Continuation rate
6 months	0111	.1815	.7949
12 months	0142	.3007	.6413
18 months	0142	.3374	.5888
24 months	0142	.4120	.4771
30 months	0289	.4407	.4214
36 months	0289	.5296	.2640
42 months	0289	.5296	.2640
48 months	0289	.5915	.1320

Life table rates for removal and expulsion are considerably higher, suggesting that this presents a far more serious problem in the pattern of IUD retention than does failure. Removal/ expulsion rates extend from .1915 at six months to .3007 at 12 months, .4120 at 24 months and .5296 at 36 months. As a result, the average duration of use is far less than the prescribed period of three years. Life table continuation rates fall from .7949 at six months to .6413 at 12 months, .4771 at 24 months and .2640 at 36 months. This implies that only about two-third of all acceptors continue to use the IUD for 12 months, less than half for 24 months and only about one quarter for the prescribed three years. Clearly then, though the IUD is highly effective, the results suggest that its use is erratic and the length of protection it offers as a result is somewhat limited.

### Complaints and side effects

Among the 400 respondents, complaints related to the IUD were reported by over half (51.5 per cent). Over two-fifths of all side effects were first

noticed within one month of insertion; another quarter (23.8 per cent) within 1-3 months, and another 11.2 per cent between three and six months. Hence, as many as two out of three of all side effects occurred within the first three months of use. This period coincides with the period of maximum discontinuation; 23.4 per cent of all discontinuers dropped its use within the first three months; another 17.1 per cent between three and six months, and another 23.4 per cent between six and twelve months. The results point to a need for adequate follow up services during the early period following insertion, in order to not only allay fears and misapprehensions regarding potential side effects, but also to provide the necessary symptomatic relief.

An important objective of this study was to identify reasons for this early discontinuation of the IUD. At the time of interview, out of the total sample of 400, 197 respondents (49.3 per cent) were continuing to use the IUD, while the remainder, 50.7 per cent or 203 respondents had discontinued. Table 6 presents reasons for which these 203 respondents were no longer using

TABLE 6

## IUD discontinuation: Reasons and subsequent contraception

<b>A. Distribution of main reasons for discontinuation of IUD</b>	
1. Excessive bleeding	29.1
2. Pain (abdominal, back), discomfort, ill health	18.7
3. Wanting another child	13.8
4. Leucorrhea (white discharge)	9.8
5. Expulsion	7.9
6. To undergo sterilisation	6.9
7. Expiry of three-year term	5.4
8. Failure of method	3.0
9. Opposition from household members/friends	3.0
10. Removed on medical advice	1.0
11. Others	1.4
Total	100.0
(N)	(203)
<b>B. Extent of switchover among discontinuers</b>	
1. % Who switched to another method	37.9
a) among those with complete information prior to IUD insertion (N=60)	46.7
b) among those with partial or no information prior to IUD insertion (N=143)	34.3



the IUD. The main reasons for IUD removal were clearly related to early side effects, including excessive bleeding and other menstrual problems, identified by almost one third of discontinuers (29.1 per cent), abdominal and back pain (18.7 per cent) and leucorrhoea (9.8 per cent). Other leading reasons include desire for another child (13.8 per cent), IUD expulsion (7.9 per cent), and to switch to a terminal method (6.9 per cent).

Table 6B shows that of the 203 respondents who had discontinued the use of the IUD, as many as 77 or 38 per cent switched to some other method, while the rest (62 per cent) did not take recourse to any other method. Clearly, the level of commitment to contraception is not satisfactory, underscoring the need for regular, supportive and well-informed follow up services to be extended in particular to clients who have discontinued the use of a method. It is of interest here to point out the importance of providing complete information on other contraceptive methods to acceptors prior to IUD insertion. Among the discontinuing respondents who had received such information, almost half (46.7 per cent) adopted another method following IUD removal, as compared with a third (34.3 per cent) of those who had received partial or no information.

### **Quality of follow up services**

It is well known that the success of any family planning programme depends to a considerable extent both on effective motivation and on follow up services. Information was elicited from respondents on the number and quality of follow up visits received from medical and paramedical staff. The results, presented in Table 7, were mixed. Over one third (36.2 per cent) of all respondents claimed to have received no follow up services whatsoever, while as many as two out of five respondents (43.5 per cent) reported six or more follow up visits. It is encouraging to note, however, that among those who did receive services, the overwhelming majority (98 per cent) found these services satisfactory.

### **Comparison between continuers and discontinuers**

As indicated earlier, at the time of the interview, 203 respondents (51 per cent) had discontinued the use of the IUD. An attempt was therefore made to identify factors which may have influenced continuation or otherwise of the IUD. Among factors considered important were such socio-economic and demographic characteristics as age at insertion, parity, education and occupation. Also included were factors relating to the extent of awareness of side effects, of other methods of contraception and attitudes of family members. Finally, factors relating to follow up visits and the respondent's

TABLE 7

## Frequency and quality of follow up services

	% reporting
A. Frequency of follow up services:	
No follow up visits	36.3
1-5 follow up visits	20.2
6-10 follow up visits	18.0
11-15 follow up visits	17.5
16-20 follow up visits	6.3
21 +	1.7
(N)	(400)
B. Of those who received follow up services, % satisfied with quality of these services:	97.6
(N)	(255)

satisfaction with these services were assessed. Also included was whether IUD insertion was done following MTP. Of these ten variables, the difference between continuers and discontinuers was significant (Chi Square at .05 level) for the following: education, extent of complete prior knowledge of both alternate methods of contraception and potential side effects of the IUD, extent of follow up services and level of satisfaction with the services.

Table 8 presents the distributions of these five distinguishing characteristics between continuers and discontinuers. Among socio-economic and demographic variables, the results suggest that education is an important factor influencing continuation. For example, while 14.7 per cent of continuers have had no education or some primary level education, as many as 29.1 per cent of discontinuers have had primary or less than primary education. The results argue for more concentrated counselling and follow up services among lesser educated acceptors.

Two other factors which turn out to be important determinants of continuation have direct relevance to the quality of service delivery. The first of these significant distinguishing factors is the extent of information available to the respondent prior to IUD acceptance. The results strongly indicate that complete information on alternatives to the IUD and potential side effects of the IUD, prior to acceptance, have a strong effect on continuation. For example, while 37 per cent of the total sample had been provided information on the variety of methods available to them prior to accepting the IUD, only 30.5 per cent of subsequent discontinuers had such information. On the

TABLE 8

**Main factors distinguishing between continuers and discontinuers:  
Percentage distribution of each sub-population by education,  
prior knowledge and follow up**

	Continuers	Discontinuers
A. Total	197	203
B. Education		
Illiterate	11.7	21.2
Upto Primary	3.1	7.9
Middle	22.3	20.2
Secondary	41.6	35.0
Pre-University Course	9.1	7.4
College +	12.2	8.3
C Knowledge of alternative methods of contraception prior to IUD acceptance		
Yes	44.2	30.5
D. Were provided information on side effects of IUD prior to acceptance		
Yes	27.9	14.3
E. Frequency of follow up visits		
0	32.5	40.0
1-5	15.7	24.6
6-10	18.3	17.7
11-15	23.9	11.3
16-20	7.1	5.4
21 +	2.5	1.0
Mean	(5.5)	(3.6)
F. Subsequent motivation of others		
Yes	75.1	62.1

other hand, 44 per cent of subsequent continuers had such information (Chi square = 7.9). Second, as far as complete information on potential side effects was concerned, again, discontinuers were significantly less likely (Chi square = 10.8) to have received information on these aspects (14 per cent versus 28 per cent among continuers).

In fact, 12 month life table continuation rates are .6256 among those with incomplete information, compared to .7069 among those who were given more comprehensive information on side effects and other family planning methods prior to acceptance.

The second of these significant distinguishing factors relates to the quality of follow up services and the extent to which the respondent was satisfied with the IUD in general. Table 7 clearly indicates the value of repeated follow up visits as a means of ensuring method continuation: the average respondent who discontinued using the IUD was significantly more likely to have received no follow up visits than the average continuer (Chi square = 16.3). Furthermore, while over half of the continuers received six or more visits following acceptance, only one third of the discontinuers received six or more follow up visits. In this case, the difference between 12 month life table continuation rates are narrower: .6526 among those who received any follow up visits, compared to .6214 among those who were never visited following acceptance. These distinctions highlight the need for continued follow up. Finally, continuers are significantly more likely to motivate others to accept the IUD than are discontinuers.

## **Conclusion**

The results confirm that the IUD is an effective means of contraception; failure rates associated with its use are within acceptable limits. Nevertheless, the results point to high rates of discontinuation as a result of removal. Continuation rates are therefore low and the duration of protection accorded by the IUD is considerably shorter than the ideal of three years.

From the results emerge several implications for the family planning programme. On the one hand, the results stress the importance of providing complete information to the acceptor during the motivation stage. When information on alternative methods of contraception are not provided, and when an accurate representation of potential side effects is not given, acceptors are significantly more likely to discontinue use of the IUD. The results also provide evidence of the importance of follow up. That acceptors of non-terminal methods require repeated reinforcement and counselling in order to overcome minor side effects and discomfort at the initial stages has been often stressed; the results here confirm that acceptors who have received such follow up attention are significantly less likely to discontinue use of the IUD than are those who have received little or no post-insertion attention.

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# **AN ANALYSIS OF REASONS FOR REJECTION AT A VASECTOMY CLINIC**

**DR. SRIANI BASNAYAKE<sup>+</sup>**

## **Introduction**

In Sri Lanka, sterilisation has been the most popular contraceptive method since the past ten years. Female sterilisation has always been more popular than male sterilisation. Upto 1980, more than four-fifths of the sterilisations performed were on women. Traditionally, males have been reluctant to accept vasectomy, even in other parts of the world. However, with the introduction of the Government's new policy to pay an out-of-pocket expense to sterilisation acceptors in 1980, male participation increased dramatically (Table 1).

**TABLE 1**

**Sterilisation acceptors, 1978-1983**

<b>Year</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
1978	2,325	19,624	21,949
1979	5,640	30,003	35,643
1980	51,284	61,642	112,926
1981	30,334	46,300	76,633
1982	13,048	48,876	61,924
1983	46,979	64,798	111,777

In the early 1980s, with the increasing demand for vasectomy due to the payment of a Rs. 500/- allowance, the Family Planning Association had to provide vasectomy services for at least a hundred men per day at its Headquarters clinic. This situation necessitated the provision of adequate screening, counselling, and record keeping, as many unsuitable clients opted for the operation. The payment of Rs. 500/- at times became an irresistible attraction to some men, especially when faced with financial hardships.

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For many jobless people, this incentive was a way of keeping the home fires burning for a few more weeks. As the Government payment was known to attract people for sterilisation for reasons other than family planning, the FPA designed a very comprehensive screening procedure to weed out unsuitable candidates. In addition, it also designed and provided a good counselling programme, which included a special video film on what a vasectomy operation entails, for whom it is most suitable, and advice pertaining to after care following the operation.

This study is based on the data obtained on screening 4376 men who requested a vasectomy at the FPA's Colombo Clinic between 1st January, 1986 and 31st December, 1987 and analyses the reasons for rejection of 640 of these men. During this period 14.6 per cent (640) of the 4376 clients were rejected (13.5 per cent and 16.4 per cent rejections during the years 1986 and 1987 respectively).

The FPA maintains a Register of all men requesting a vasectomy at its Headquarters clinic. In this, information pertaining to age, number of children, age of youngest child, educational level and similar data pertaining to the spouse are recorded. The Association has its own policy guidelines and has laid down certain criteria of eligibility for those seeking a sterilisation. All staff responsible for registration have to abide by these criteria. Eligible clients are charged a service fee of Rs. 50/-.

### **FPA's Eligibility Criteria for Vasectomy**

According to the criteria laid down by the FPA, a potential vasectomy acceptor should:

- a) be married,
- b) have at least two children, and if having only two children, the youngest child should be at least 12 months old,
- c) not have any medical contraindication, and
- d) produce documentary evidence of identity and age.

The Government payment is made only to men who are under 50 years of age. Those over this age limit, can have a vasectomy done, but are not entitled to any payment. The Rs. 500/- Government payment can be claimed by the client immediately following the operation.

### **Results**

A very high proportion of rejections were made due to the fact that the clients had only two children, and the youngest child was under one year of age; 64 per cent of all rejections were due to this reason. Another 8.4 per cent were rejected as they had only one child. It may be noted that both

these categories could have got a vasectomy done at another centre as the FPA's stringent rules do not apply at all centres. Thus, these cases which constitute 72 per cent of the rejections, may have therefore subsequently gone elsewhere and had the operation done. These criteria were introduced by the FPA because of the inability to offer a regular service for reversal of the operation, and the uncertainty of the outcome of reversal procedures. Moreover, these guidelines were enforced long before the introduction of the incentive payment, when the FPA was performing more than 90 per cent of the total vasectomies done in the country, and had at times received requests for reversals from men who had re-married, or lost a child, or who had in later years, had second thoughts about having had an operation.

TABLE 2

## Reasons for rejection

Reason	Number	Percentage
1. Only two children, and youngest under one year	410	64.0
2. Only one child	54	8.0
3. Very young men with no proof of age or paternity	96	15.0
4. Over 50 years, not eligible for incentive	38	6.0
5. Unmarried	16	2.5
6. No children	8	1.3
7. Medical reasons	9	1.4
8. Other reasons	9	1.4
Total	640	100.0

About 15 per cent of the rejections were due to the inability of the men to prove their age (they looked very young) or prove that they had in fact any children at all. In such situations, the decision to reject a client is not taken by the registering nurse. Such clients are referred to a Medical Officer, who makes a thorough assessment of each individual case before making a final decision. In this category, there were young men who did not appear to be out of their teens, claiming that they were in their late twenties or thirties, and further claiming to have two or three children. These young men do not bring along their Identity Cards or birth certificates to prove their age, and the only evidence they can produce, is another man who offers to swear to the correctness of the information given. At times, such youngsters produce J.P.s certificates procured from "commission agents", which have been found to be false. There used to be a time when the demand for vasc-



tomies was very heavy, that self-appointed J.Ps found it a lucrative business to operate on the road leading to the FPA, and J.Ps' certificates certifying the person as being of any desired age between 20 to 50 years, complete with a seal, could be had for a payment of anything between Rs. 50/- to Rs. 100/-. In the author's personal experience, a very high percentage of the clients in this category, were unmarried young boys who were just out of school. Many of them had been misinformed and misled by con men who were trying to make some quick money. Often, after a lengthy counselling session they would realise their folly and disclose the truth. As 15 per cent of all rejections fell into this category it re-emphasises the importance of careful screening at all service centres.

A fair number of men (6 per cent) turned back when they were informed that they could have the operation, but not the Government payment of Rs. 500/- as they were over 50 years. In this category there were quite a few who were in their sixties and seventies, who could hardly walk and had to be supported by a friend or relative. They claimed they were in their forties or even late thirties and had lost their birth certificates.

A small percentage (2.5) were unmarried, and another 1.3 per cent were married, but had no children. These men were not aware that vasectomy is an irreversible, permanent method of family planning, and had been under the mistaken belief that it was just another temporary method for males.

Recently, two instances have been reported where the reversal operation had to be performed on two young, unmarried men who had undergone a vasectomy without realising its implications.

It is seldom that men get rejected for medical reasons, and in this study, only nine men fell into this category. These men were rejected by the doctor as they had some other surgical or medical problem which made them unsuitable for vasectomy on that day. These included two cases with large inguinal herniae, five with hydrocoeles, and two with infected scabies affecting the entire scrotal region.

An equal number of men were rejected for other reasons. These included four men who came cycling, unaware that it was not advisable for them to cycle back home after the operation. Two others changed their minds when the permanency of the procedure was highlighted. These six men had already been registered, but the counselling film enlightened them on the situation, and they therefore decided to turn back. Two others who had already been sterilised, thought that they could cheat the doctor and collect Rs. 500/-, once again. However, the knots of the previous operation were palpated when they got on to the table and they beat a hasty retreat from the theatre. The last man in this category was too drunk to answer any questions put to him by the registering nurse.

## **Conclusions**

This study clearly indicates the importance of careful screening of all clients presenting for sterilisation, to prevent unsuitable and misinformed young men from being sterilised. This is very important as facilities for reversal are scarce in Sri Lanka. Even though a high percentage of rejections in this study were due to the strict eligibility criteria imposed by the FPA, we feel we are fully justified in doing so. We have taken this stand as it has been our experience, that the incentive of Rs. 500/- paid to all sterilisation acceptors, does at times attract unsuitable clients, especially young people and tempt people to make a hasty decision, in which the motivating force is the financial benefit, and not the need for a permanent method of contraception.

The permanency of the method, and the possible non-reversibility should be explained to every client prior to surgery, as the study clearly indicates that some men have misconceptions about the method.

Hence it is of paramount importance for programme managers and medical officers conducting sterilisation operations, to ensure that prospective clients are adequately screened and counselled before the operation.

# **IMMUNISATION OF CHILDREN AND ITS CORRELATES IN RURAL UTTAR PRADESH\***

**DR. J.N SRIVASTAVA<sup>+</sup>**  
and  
**DR. D.N. SAKSENA<sup>++</sup>**

## **Introduction**

To protect children against certain deadly and crippling diseases of infancy and early childhood, the child immunisation programme has been made an important component of maternal and child health care services in India. As a part of this programme, the DPT triple vaccine is given as protection against diphtheria, whooping cough and tetanus, and polio drops and BCG vaccination are given to prevent poliomyelitis and tuberculosis. The National Health Policy envisages the protection of 85 per cent of the children below three years of age by DPT and 70 per cent and 80 per cent of infants by polio and BCG vaccines respectively by the year 1990<sup>1</sup>. In view of the relatively higher infant and early childhood morbidity and mortality in Uttar Pradesh, particularly in the rural areas of the State, the immunisation programme assumes special importance for rural Uttar Pradesh. The Primary Health Centres (PHC) have been assigned the task of achieving the targets in this regard through education and motivation of parents in the area.

## **Objectives**

The present investigation seeks to find out the level of protection given by the above-mentioned three important service components of the child immunisation programme in rural areas of Uttar Pradesh state and to understand the associated factors including the role of the Primary Health Centre, in this regard.

## **Methodology and Data**

Sikandarpur Karan PHC of Unnao district in Central Uttar Pradesh was

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\* This paper is based on a field study conducted by the authors as a part of the research programme of the Population Research Centre, Department of Economics, Lucknow University, Lucknow.

selected for the study. All mothers who had delivered a child in the year 1982-83 were sought to be contacted for the data collection work. The analysis is based on the responses recorded on a pre-structured interview schedule, of 1256 mothers, who could be contacted in the course of the field investigation during the period November 1984 to February 1985. The coverage provided by the three service components—DPT vaccine; polio drops and BCG vaccine—has been studied separately as well as jointly, the latter in terms of protection by neither and by all three services. To understand the role of the PHC and other factors influencing the programme, differentials in coverage by appropriate locational, health care and socio-economic factors have been analysed and their association with coverage by none and all the three service components has been tested by using the Chi Square test. When considered necessary, the test for difference in proportions has also been used.

## Results

### *Overall Coverage*

Table 1 presents the level of overall protection provided by the three selected service components of the child immunisation programme. Panel A gives individual protection rates and Panel B gives the protection rates of the three services considered together.

TABLE 1

#### Distribution of children by immunisation coverage

Coverage by	Number (%)
A. DPT	290 (23.7)
Polio	278 (22.7)
BCG	142 (11.6)
B. <i>Joint coverage by</i>	
None	813 (66.5)
One	195 (16.0)
Two	127 (10.4)
Three	87 (7.1)
Total	1222 (100.0)

Table 1 reveals that the immunisation programme has provided a very

poor level of protection to the children in the study area. Two-thirds of the children were not protected by either of the three services—DPT, polio or BCG, and not even one-fourth had been covered by any one of the three services. The coverage rate for DPT was the highest (23.7 per cent), followed by that for polio (22.7 per cent); BCG had the lowest coverage (11.6 per cent). The situation in the study area is much worse than in South Gujarat, where 50 per cent of children had been protected by BCG, 45.6 per cent by DPT and 27.9 per cent by the polio vaccine towards the end of 1970.<sup>2</sup>

Considering the protection level of the three services taken together, only one-fourteenth of the reference children had been protected by all the three services, one-tenth by two and one-sixth by one service thereby leaving two-thirds of the children totally unprotected. This speaks very badly of the child health care education and services expected to be provided under the MCH programme and the role played by the health staff in this regard, in the study area.

### *Reasons for Low Coverage*

The responses of 806 parents whose children had not received any immunisation at all and had survived upto the relevant study period, were elicited to determine the reasons for non-acceptance of these child health services. The responses were analysed in terms of the distance of the PHC from the respondent's residence.

TABLE 2

#### Reasons for non-acceptance of immunisation facilities

Distance from PHC in kms.	Number of respondents	Reasons				
		No health worker told about it	Elders advised against it	Fear of complications	Did not consider it necessary	Others
Less than 3	48	62.5	2.1	4.2	29.2	2.1
3 to 5	158	73.4	3.2	3.2	18.4	1.9
5 and above	600	74.2	3.2	3.2	18.7	1.3
		$\chi^2_2 = 3.1$				
Total	806	73.3	3.1	2.9	19.2	1.3

The subscript of the Chi-square value indicates the degrees of freedom.

The findings show a lack of awareness of the immunisation programme

in the area (Table 2). Apart from a marginal 5 per cent of the cases who reported reasons like elder's opposition etc., about three-fourths did not know about the immunisation programme because "no health worker told about it" or they did not understand its necessity or harmless nature. The distance of the PHC from the place of residence of the respondent did not influence their awareness of the immunisation facilities in any way. While a somewhat larger proportion of respondents living in the neighbouring villages appeared to have been told about the immunisation programme by the health workers, many of these respondents also lacked understanding about its necessity and their misapprehensions persisted. The proportion of respondents who had not been approached by any health worker did not show any significant association with distance from the PHC. The poor role of the health worker is thus clearly brought out in this regard.

#### *Differentials by Distance from the PHC*

Table 3 provides information on differentials in immunisation coverage by distance from the PHC.

TABLE 3

Differentials in immunisation coverage by distance from the PHC

Distance in kms.	Number of respondents	Per cent immunised with				
		DPT	Polio	BCG	None	Three
Less than 3	96	22.9	38.5	18.8	53.0	9.6
3 to 5	247	19.4	25.5	7.7	64.0	3.2
5 and above	879	25.0	20.3	12.0	68.7	7.7
$X^2_2 = 10.4^{**} X^2_1 = 3.0$						
Total	1222	23.7	22.7	11.6	66.5	7.1

The subscript of the Chi-square value indicates the degrees of freedom.

\*\* =  $P < 0.01$  Brackets denote pooling for testing.

A significant positive impact of distance on percentage coverage of the reference children is clearly visible from the consistent increase in the percentage of unprotected children by increasing distance: from 53.0 per cent for those living within 3 kms. of the PHC to 68.7 per cent for those living beyond 5 kms of the PHC. In respect of protection by all the three services, however, the influence was not so clear or significant. It appears that some educated parents even in the farthest villages ensured complete protection of their

children with the help of the PHC or other sources at the district headquarters town of Unnao.

Analysed individually, the polio vaccine was most availed of in the neighbourhood of the PHC and its coverage declined with an increase in the distance of the respondent's residence from the PHC. However, there was no consistent decline by distance in the coverage of the BCG vaccine, while, DPT had the highest coverage in the farthest villages, perhaps due to the health consciousness of certain parents as indicated above. The analysis suggests that a larger input of extension work by the PHC is required to make the programme popular particularly in distant areas.

#### *Differentials by Ante-natal Consultation*

Table 4 presents the differentials in immunisation coverage of the children on the basis of whether their mothers had or had not received ante-natal consultation.

TABLE 4

Differentials in immunisation coverage by ante-natal consultation

Consultation status	No. of respondents	Per cent children immunised for				
		BPT	Polio	BCG	None	All three
Consulted	277	40.1	40.8	19.9	45.8	14.4
Not consulted	937	18.8	17.3	9.1	72.9	4.9
					$\chi^2_1 = 70.4^{***} \chi^2_1 = 29.5^{***}$	
Total	1222*	23.7	22.7	11.6	66.5	7.4

The subscript of the Chi-square value indicates the degrees of freedom.

\* includes non-response cases.

\*\*\*  $P < 0.001$ .

The findings clearly reveal the promoting influence of ante-natal consultation on the acceptance of the immunisation programme. The coverage among the group which had received ante-natal consultation was more than twice that of the group which had not received such advice, for all the three child immunisation services. Likewise, lack of any protection showed a significant negative association with ante-natal consultation status. This suggests that provision of health care advice to mothers during the ante-natal period would be a good way of accelerating the immunisation programme.

*Differentials by Religion and Caste*

Religion, caste and education of the respondents i.e. the father and the mother of the child, were selected for analysing social differentials in protection by the immunisation programme. Tables 5 and 6 present these findings in relation to caste and religion, and educational status of the respondents respectively.

TABLE 5

Differentials in immunisation coverage by religion and caste

Consultation status	No. of respondents	Per cent children immunised for				
		BPT	Polio	BCG	None	All three
Hindu high	287	33.1	37.6	18.5	52.3	13.6
Hindu middle	402	20.7	18.9	9.7	72.2	5.5
Hindu low	433	21.8	16.9	10.3	69.3	5.3
					$9X_1^2=32.9^{***}$	$X_2^2=20.7^{***}$
Total Hindus	1122	24.2	22.9	12.2	66.0	7.5
Muslims	100	18.0	21.0	5.0	73.0	3.0
				$X_1^2=2.1$		$X_1^2=2.8$
Total.	1222	23.7	22.7	11.6	66.5	7.1

The subscript of the Chi-square value indicates the degrees of freedom.

\*\*\*  $P < 0.001$ .

The level of protection of the reference Muslim children was less than half that of Hindu children for all the three services, but the difference in lack of protection by any single service was not sharp because of smaller differences between the two communities in regard to protection by one or two service components. Considering each service individually, Muslims had a lower protection level for all the three services, the difference being greatest for BCG and smallest in respect of polio vaccine.

Castewise, among Hindus, the level of protection by all the three services varied directly and lack of protection by any method varied inversely with the caste status. Both these associations were highly significant. However, using the test of difference of proportions, while differences in coverage between high caste Hindus and middle caste Hindus were found to be highly significant both in regard to protection by all methods ( $Z = 3.63$ ) and no method ( $Z = 5.32$ ), differences between middle and lower caste Hindus were



not significant in either respect ( $Z = 0.11$ ,  $Z = 0.91$  respectively). High caste Hindus also had the highest protection level in regard to individual service components, though the difference between middle and lower caste Hindus was marginal.

The analysis suggests that although the immunisation programme has to be popularised among both Hindus and Muslims, Muslims have to be motivated to a greater extent in order to accept not any one component of the programme but all the three components taken together. Similarly, among Hindus, middle and lower caste Hindus require more attention. In particular, they have to be convinced about the need to protect the child by all the three services provided under the immunisation programme.

#### *Education of Father and Mother*

The influence of the father's and mother's education on the acceptance of the child immunisation programme is presented in Panel A and Panel B respectively of Table 6.

The promoting influence of the father's education above the Junior High School level on acceptance of the immunisation programme is clearly visible as indicated by a consistent increase in the acceptance level of all the three service components taken individually or jointly, and a consistent decline in lack of protection by any of the three components. The sharpest increase was seen in regard to acceptance of the polio vaccine and joint acceptance of all the three services. These relationships were highly significant, and indicate that with an increase in the educational level of the father, there is increasing realisation about protecting the child by all the three service components of the immunisation programme.

In contrast to this, the influence of mother's education on acceptance of the immunisation programme was visible at the simple literacy level itself. Testing by difference in proportions of children unprotected by any of the three service components of the immunisation programme among illiterate fathers and mothers versus fathers and mothers educated below the Junior High School level, revealed that the difference was significant in the case of mothers ( $Z = 2.43$ ) but not in case of fathers ( $Z = 0.4$ ). The corresponding analysis for complete protection also showed a significant influence of education in the case of females ( $Z = 2.2$ ) but not in the case of males ( $Z = 1.58$ ). The level of protection of the reference children was least among illiterate mothers and increased almost consistently, in regard to all the three components, taken individually as well as jointly, as the mother's educational level increased. Concomitantly, the complete lack of protection by any of the three methods declined steadily with increasing education of the mother. The largest increase, here too, was seen in regard to protection against polio

TABLE 6

**Differentials in immunisation coverage by father's and mother's education**

Level of education	No. of respondents	Per cent immunisation coverage by				
		BPT	Polio	BCG	None	All three
<b>A: Father's education</b>						
Illiterate	477	19.1	15.5	9.4	72.8	4.0
Below primary	109	20.2	22.9	11.9	69.7	8.3
Primary to below Junior High School	216	19.4	17.2	9.3	72.2	5.6
Junior High School to below High School	174	25.9	27.0	12.6	63.3	9.2
High School to below graduate	194	36.4	37.5	15.4	57.7	11.8
Graduation & above	47	38.3	46.8	23.4	44.7	17.0
					$X^2_3=37.4^{***}$	$X^2_3=19.0^{***}$
Total	1222*	23.7	22.7	11.6	66.5	7.1
<b>B. Mother's education</b>						
Illiterate	939	20.6	18.6	10.5	70.2	5.9
Below primary	36	27.8	25.0	13.9	63.9	11.1
Primary to below Junior High School	138	31.2	31.2	13.8	60.1	10.1
Junior High School to below High School	64	34.3	35.9	12.5	54.6	11.0
High School & above	41	46.3	63.4	24.3	29.2	14.6
					$X^2_2=30.5^{***}$	$X^2_2=9.7^{**}$
Total	1222*	23.7	22.7	11.6	66.5	7.1

The subscript of the Chi-square value indicates the degrees of freedom.

\* includes non-response cases. Brackets indicate pooling of groups for testing.

\*\*  $P < 0.01$ .

\*\*\*  $P < 0.001$ .

and joint protection by all the three services.

These findings suggest the need for horizontal and vertical expansion of education programmes for both spouses, with an additional emphasis on

female education. Further, illiterate mothers could also be imparted child care education under the adult education programme.

### *Differentials by Economic Characteristics*

The occupation of the father, housing conditions and family status were included as economic status indicators for analysing differentials in coverage, by the immunisation programme. Family status was measured in terms of durable household assets.

### *Occupation of Father*

Table 7 indicates that the immunisation level in general, rose with a rise in the occupational status of the respondents both in regard to individual and all three services together. The total lack of protection by any method, on the other hand, declined with a rise in occupational status. Both these relationships were statistically significant.

TABLE 7

#### Differentials in immunisation coverage by father's occupation

Occupation	No. of respondents	Per cent immunisation by				
		BPT	Polio	BCG	None	All three
Professional technical etc.	126	39.7	42.9	21.5	47.7	17.4
Business other than petty trade	46	26.0	32.6	13.0	65.3	10.8
Farming	500	24.4	21.0	11.0	67.6	7.6
Production work	56	23.2	23.2	8.9	71.5	7.1
Manual labour	318	19.2	18.2	9.7	70.5	3.4
Petty trade	93	12.9	20.4	9.7	70.9	3.2
Others	70	25.7	18.5	11.4	64.2	5.7
$\chi^2_3 = 19.0^{***}$ $\chi^2_3 = 27.9^{***}$						
Total:	1222*	23.7	22.7	11.6	66.5	7.1

The subscript of the Chi-square value indicates the degrees of freedom.

\* Includes non-response cases. Brackets denote pooling of groups for testing.

\*\*\*  $P < 0.01$ .

The sharp increase in coverage by the three services taken jointly is indicative of the fact that higher occupational status causes couples to realise the importance of protecting their children by all the three components of

the programme. Manual labourers and petty traders were found to be most in need of child health care education. Moreover, the fact that even in the highest occupational categories the coverage by all the three service components was provided to only one-sixth of the children outlines the necessity for convincing the parents about the desirability of achieving complete protection.

### *Housing Situation*

An analysis of immunisation coverage by status of the household indicated a positive variation by individual services as well as by all the three services considered together (Table 8, Panel A). In conformity with this, complete lack of protection by any method varied negatively with the status of the household. Both associations were significant. The findings suggest that people living in Kachcha and thatched houses form the priority target groups for child immunisation education.

TABLE 8

#### Differentials in immunisation coverage by type of housing

	No of respon- dents	Per cent children immunised by				
		BPT	Polio	BCG	None	All three
<b>A. Type of House</b>						
Pacca	150	36.7	40.0	20.7	46.0	13.3
Kachcha	782	22.9	22.1	10.0	69.3	6.5
Thatched	290	19.3	15.5	11.4	69.7	5.5
					$X^2_2=33.3^{***}$	$X^2_2=10.2^{***}$
Total:	1222	23.7	22.7	11.6	66.5	7.1
<b>B. Family status</b>						
Low	360	20.0	16.1	8.9	73.3	4.7
Middle	613	23.0	20.9	11.4	67.8	7.0
High	238	31.9	38.7	16.8	51.7	11.3
					$X^2_2=31.4^{***}$	$X^2_2=9.5^{**}$
Total:	1222*	23.7	22.7	11.6	66.5	7.1

The subscript of the Chi-square value indicates the degrees of freedom.

\* includes non-response cases.

\*\*  $P < 0.01$ .

\*\*\*  $P < 0.001$ .

### *Family Status*

The results of the differentials in immunisation coverage by family status of the respondents presented in Table 8, Panel B were in conformity with those of other economic status variables. A positive variation was observed in the protection rate provided to the reference children by the three individual immunisation services as well as their joint protection, when analysed with respect to family status. Similarly, complete lack of protection by any of the three services was observed to vary inversely with family status. Both correlations were significant. Among the individual service components, the maximum variation was observed in case of protection by all the three services. The protection rate of the polio vaccine and all the three services was only about two-fifths in the lowest status group as compared to the highest status group. The findings suggest that lower family status groups, particularly the lowest should form the prime target group of the programme.

### **Conclusion**

The study has revealed a very low level of protection of children under the child immunisation programme in the study area suggesting only a marginal role played by the PHC and its health workers in promoting this programme. The analysis of differentials has brought out that ante-natal consultation has a strong promotive influence on protection of children by the immunisation programme, while the distance from the PHC plays only a marginal negative role. Among the two religious communities, Muslims had a far lower child immunisation rate than Hindus, the maximum difference being observed in regard to BCG vaccination, which they may require to a greater extent due to a greater prevalence of the purdah system and the associated incidence of tubercular infection. Among Hindus, children of lower and middle caste couples had lower protection levels.

Education of both the husband and the wife was found to exercise a promoting influence on immunisation coverage. The mother's education, had a more pronounced effect which is seen with the acquisition of a simple literacy status unlike the father's education. Among the different occupational categories, children of manual labourers and petty traders had the lowest protection level and require greater attention. By other economic status characteristics, people living in kachcha and thatched houses and those occupying the lowest status in terms of possession of durable household assets should form the prime target groups for popularisation of the immunisation programme.

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# **“RISK APPROACH”—A COMMON-SENSE APPROACH FOR SAFE MOTHERHOOD AND CHILD SURVIVAL**

**MR. R.K. SACHAR<sup>+</sup>**

In India, more than a third of the population consists of women in the reproductive ages and children under five years of age. This large section of the community is vulnerable to disease, disability and death, as a result of a number of interacting biological, social, environmental and genetic characteristics. For some individuals in this group, these characteristics are more pronounced and place them at a greater risk of disease or complications, acting singly or in varying combinations. Such characteristics are termed as risk factors. Social justice demands that health care should be directly proportional to the need (usually it is inversely proportional) so that every individual has an equal opportunity of attaining a satisfactory level of quality of life.

Morbidity and mortality amongst the vulnerable has not shown a decline commensurate with the ‘increasing coverage’ attained by health care services. This is mainly because the care is not need-based and a blanket coverage is provided. Communities are not homogeneous and glaring disparities exist between the ‘haves’ and the ‘have-nots’. The prospects for child survival and safe motherhood are intricately woven within the socio-economic fabric of the community, and not even the simplest interventions for child survival and safe motherhood can reach those who actually need it due to the way in which conventional health services operate. This is why some workers have been expressing serious concern about the ability of primary health care programmes in meeting the health needs of the target group<sup>1-3</sup>. This can be remedied by channelising the care in such a way that it reaches the targeted group i.e. by using a ‘risk approach’.<sup>4,5</sup> The ‘risk’ strategy or approach is a managerial tool that seeks to equitably distribute health care resources so that better services are available for all but special attention is given to those who need them most.

## **The Risk Approach Applied to MCH Care**

The following steps are involved in applying the risk approach to maternal and child health care:

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- 1. Establish a demographic surveillance system to monitor the health of the target groups, to identify the real health needs or risks, and measure the outcomes (or casualties) associated with the risk factor/factors in a particular population.**
- 2. Make predictions regarding the level of care required by individuals or communities facing various levels of risk.**
- 3. Plan interventions and provide anticipatory care in proportion to the risk(s) depending on the resources available.**
- 4. Establish a management information system which will facilitate planning, implementation, monitoring and evaluation of the risk strategy in particular and of the health service programme as a whole.**

It must be emphasised that the risk approach cannot be developed in isolation. It can only be expected to function as an integral part of the health care system and not as a vertical programme within a health system. The chances of success of the risk approach are by and large pre-conditioned by the level of efficiency at which the health services operate. It must be realised that the risk approach is no panacea but a managerial tool which requires both commitment and competence. It is essentially a tool to improve the efficiency and effectiveness of primary health care services.

### **Demographic Surveillance System**

Information as to what is happening in the community is vital for planning, implementing, monitoring and evaluating the risk strategy. This information support can only be provided by establishing a system of constant community monitoring, and recording the health profile of the community and the changes that occur from time to time in this profile. We have been using one such demographic surveillance system in our community health care programme<sup>6</sup>. Such a methodology of community monitoring is important for providing clues to vital entry points for initiating high risk care i.e. a new pregnancy, a birth, etc.

### **Identification of Those at Risk**

Once a system of community monitoring or screening has been established the next step is to detect high risk cases for special care. The type and number of cases to be taken up for special care would depend on the resources available and within these available resources, which of the undesired outcomes in high risk groups are to be combatted by intervention strategies. A necessary prelude to this screening is that a check-list of locally relevant risk factors be available so that it can be applied to individuals who may be at increased risk.



### **Risk Factors and Risk Indicators**

When a characteristic is directly linked with an undesired outcome it is referred to as a 'risk factor' (e.g. old age, high parity, poor obstetric history, are known to be associated with perinatal mortality). In other words, the risk factor and outcome have a cause and effect relationship.

Risk indicators are those general characteristics which do not have a cause and effect relationship (e.g. poverty, poor housing) but they certainly influence the outcome and at times are very important determinants of the outcome.

The risk factor and risk indicators operate in unison and in varying combinations. Hence the interventions require a multifactorial approach and extend beyond the medical frontiers of care.

It must be remembered that many a time an 'outcome' of a risk factor in turn, becomes a risk factor, thus forming a vicious circle. Such outcomes need to be taken special note of. The commonest example is of certain factors that may lead to child malnutrition and this malnourished state of the child makes him vulnerable to further undesired outcomes. A less common example is of maternal death which is an outcome of poor obstetric care; this parental loss becomes a strong risk factor for the new-born.

It is worth remembering that even in a well planned programme there are always some 'freaks' i.e. a highly undesirable outcome in someone who is practically at no risk (though no one has zero risk), or the failure of a predicted outcome (in the absence of intervention) in someone who has a battery of risk factors at work. In more technical language, these can be referred to as false negatives and false positives.

### **Entry Points**

It must be remembered that there are some important recognised entry points which are crucial for detecting individuals at high risk. These are the beginning of a new pregnancy, a new birth or when a child becomes 5-6 months old i.e. when breast-feeds alone become insufficient, and weaning should start. However, it must be noted that the 'risk status' is a dynamic phenomenon, and an individual is likely to keep moving from high risk to low risk and vice versa. Hence a periodic reassessment of the risk status is important.

### **Who Keeps the Population Under Surveillance?**

The auxiliary health worker who is responsible for the health of a delimited population group keeps the mothers and children under surveillance and detects high risk individuals according to a method elaborated for local use. We, at the Department of Community Medicine, Mohan Dai Oswal

Cancer Treatment & Research Foundation, are in the process of developing a 'prognostic index' for mother and child health care. By applying this index, factors in favour of the child or mother are weighed against factors working against the individual and the degree of risk is assessed subjectively. Those detected are referred either downwards to the community health volunteer or upwards, or intervention carried out by the worker herself. The fact that lay health workers can provide high risk care has been well documented<sup>7, 8</sup>. The cut-off points for these referrals are determined by the local conditions.

The care of the high risk groups is a continuous process. For example, a high risk pregnancy will need care till the risk has been removed or the woman has safely delivered, or a child at the increased risk of getting malnourished will need care till he is beyond the critical period. The auxiliary health worker will hand over the high risk individuals to the community health volunteer for closer monitoring and continuous care and will receive a feedback on all the cases. Cases requiring highly specialised care will be referred to the next level of care. However, the auxiliary health worker plays a key role in the implementation of the risk strategy. It cannot be over-emphasised that the success of the risk strategy demands the presence of an adequately functioning referral system with an appropriate feedback. This feedback (which is very sadly lacking at present) is important both from the point of view of continuous education of the auxiliary worker and of keeping her informed about her patients.

Some high risk children or pregnant women will need a secondary level of care (for instance, women with complicated labour or children with bronchopneumonia) if a catastrophic outcome is to be avoided. Hence, the availability of a secondary level of care is vital. This has been well documented<sup>9</sup>.

### **Intervention Strategy**

This will vary from area to area and largely depends on the frequency of various 'outcomes' in an area and the resources available within the community. In some communities, the priority may be perinatal mortality, while in others it may be infant mortality. Within a strategic framework also, there would be certain things that can be done and others which cannot be done. In the case of a risk factor which is causally related to outcome and amenable to intervention, the intervention will be directed to a reduction of the risk factor, for example, prevention of bottle-feeding or promotion of age-related supplements. However, others like poverty or illiteracy will require larger social action beyond the usual boundaries of health care, requiring a political will amongst many other things, and hence outside the scope of a local, risk strategy.

The strategy should be so designed that it aims to help the people within their given socio-economic environment. Priorities for intervention should be selected locally on the basis of criteria such as the:

- i) prevalence of the problem
- ii) severity of the problem
- iii) seriousness of the problem
- iv) desires of the local community (because 'consumer support' is important in any programme
- v) feasibility of the intervention, and lastly but probably of maximum importance,
- vi) cost involved.

However, as already stated, most outcomes have a multifactorial causation, a number of risk factors are involved, many of them common in various outcomes and hence the intervention strategy will largely have to be multi-pronged.

### **Evaluation**

Evaluation of the risk approach has two main aspects. First, is the evaluation of the functioning of the strategy itself, and should be aimed at finding out whether the strategy has been successful in:

- i) identifying those at risk
- ii) channelising resources towards the needy
- iii) providing care on an ongoing basis
- iv) acceptance of services by the consumers, and
- v) consumer satisfaction.

In other words, the first aspect of evaluation will address itself largely to the short-term objectives of the risk approach. The second aspect of the evaluation in relation to the long-term objectives of the approach, will need to answer questions such as:

- i) Did the really needy benefit?
- ii) What did it cost?
- iii) What overall improvement in health status has it made in terms of lives saved and quality of life of the survivors?
- iv) Is it reproducible?

Needless to say, that for any meaningful evaluation the long and short-term objectives should be spelt out initially.

To conclude, once again, the risk approach is not a panacea but a managerial instrument which can greatly increase the effectiveness of primary health care programmes. Its success largely depends upon the 'MAN' behind the approach.

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# **MAKING THE POPULATION PROGRAMME A PEOPLE'S PROGRAMME \***

**DR. VINOD M. PATEL<sup>+</sup>**

This paper presents a conceptual model for information, education and communication (IEC) programmes based on the IEC activities and experiments carried out in Gujarat state in India. The model extends and clarifies communication goals, dimensions, and activities identified for a successful family planning programme by Schramm<sup>1</sup> and Rogers<sup>2</sup> in the seventies.

The paper is presented in three parts. The first part presents a scenario of the population problem and the strategy adopted by the country. This is followed by a description of the IEC activities and experiments conducted in Gujarat state in India. Finally, a conceptual underpinning and rationale of the IEC activities in Gujarat state are provided.

## **The Indian Scenario**

“Our population has crossed the 500 million mark. This is a danger signal which we can ignore only at our peril”

This warning given by the eminent philosopher and the then President of India, Dr. S. Radhakrishnan, in the sixties was an eye-opener for India's planners and people.

In 1987, India's population had already crossed the 770 million mark, and was growing at a rate of 2 per cent per annum, adding on 15 million persons annually. Forty per cent of this population is below 15 years of age. With the advances made in the field of medicine and improvements in environmental conditions, the death rate and infant mortality rate have come down rapidly, and life expectancy has gone up. But the decline in the birth rate has been slower. This situation has upset the delicate balance between the work force and the dependent population and between the demand and supply of essential needs of the population. Consequently, the maxim “produce and perish or reduce and relish” has become the watchword of India's population problem.

## ***Strategy for Population Control***

India was the first country in the world to adopt family planning as a

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state policy in 1952 as a part of health, maternal and child health, and family welfare. The first Five Year Plan (1951-56) provided the setting up of service clinics. During the second Plan the activities initiated during the first Plan were intensified, and the third Five Year Plan shifted the strategy from the clinic approach to the extension approach. Since the fourth Plan (1969-74), the population programme has been geared up on a war footing.

The shift from the clinic to the extension approach was based on the belief that people's participation is the cornerstone for the successful implementation of any public programme which involves social change at large, and behavioural changes at the individual level. Voluntary organisations have played an important role in the provision of social services in India. Their presence and contributions in the health, education and social welfare sectors is noteworthy. The sixth Five Year Plan (1980-85) was explicit in its support of non-governmental organisations (NGOs). It stated that planning becomes more meaningful when people not only associate themselves in planning but also participate in implementation.

The promotion of NGOs who can motivate and mobilise people to participate in developmental tasks is very important. Of course, this concept of people's participation cannot be summarised or equated to increasing awareness or creating favourable attitudes. It is a much wider concept, and implies the inculcation of a particular manner of behaviour in the life style of individuals, groups and the community, to the extent where people as a whole not only accept the concept of planning families but practice it as a part of the social custom without the constant intervention of the government or any other agency. Only then does a programme become a people's programme.

The strategy of the family welfare programme is in line with the democratic constitution of the country and the heritage of the freedom struggle through voluntary participation under the leadership of Mahatma Gandhi. Mahatma Gandhi stressed education, motivation, and persuasion as the main weapons not only for the struggle for freedom, but also for the struggle against social evils like untouchability, dowry and child marriage.

Despite this heritage, our achievements in the sphere of social reform in general, and in the family welfare programme in particular, have not been as remarkable and rapid as those during the freedom movement. In the latter case, our efforts were focussed against an external force and united the country as a whole. Moreover, the struggle was concerned with the external behaviour of the individual and the community. But when it comes to social reforms or birth control, the change is difficult to achieve because it touches the most essential bio-psycho-social behaviour of the individual and the community. Any change in this area is made more difficult by low literacy levels (36

per cent in 1981), socio-economic backwardness, and the physical inaccessibility of various areas of the country.

It is therefore not a surprise that the targets for family planning had to be repeatedly revised. Reducing the birth rate within 10 years from 41 to 25 was the goal at the beginning of the programme. But, during the seventies and eighties these goals were not only not achieved but were found to be difficult to achieve. Now the government of India has set itself the goal of reducing the present birth rate of 32 to 21 by 2000 A.D. Not only has the government set itself a new target but it is also confident of achieving it, because IEC programmes and activities through face-to-face communication, group and mass media have been able to achieve almost universal awareness of the need for planning families. Consequently, today the mass media is able to carry messages on population problems and birth control methods more directly, repeatedly, and during prime time. This marks the take-off stage for people's participation if India's own experience in extension work in agriculture during the late sixties and seventies can bear a parallel.

### **The Gujarat Experiment**

#### *Family Welfare Programme Structure in India*

The family welfare programme in India, is a centrally sponsored programme with a common administrative infrastructure, budget, training, and IEC programmes. The programme is administered in the states according to the guidelines provided by the Central Government. However, each state is encouraged to introduce innovative approaches within these broad policy parameters. Attempts are also made to inject a spirit of competition among the states through national awards for exceptional performance and innovative methods.

The Central Council of Health and Family Welfare at the national level, consists of the Health and Family Welfare Ministers of all states. This Council frames policies and determines the general guidelines for implementation. The state governments, in turn, have Family Welfare Councils consisting of elected members, prominent social workers, representatives of voluntary organisations and professionals.

There are advisory committees for the national television and radio networks, consisting of professionals, social workers, and experts to suggest need-based programmes. There are similar advisory committees at the state, district, and block levels consisting of opinion leaders and officials to monitor, guide, and gear up the programme, including IEC activities.

#### *Gujarat State—A Profile*

Gujarat is one of the 25 states of the Republic of India. Situated in the

western part of the country, it has a land area of 196,000 square kilometers and a population of 34 million (1981 census). It is one of the prosperous and progressive states of the country. Much of its prosperity is due to a long tradition of trade and business. In the last hundred years, there has been a move from trading to industry in areas such as textile, engineering, and pharmaceutical. Though success in economic affairs is important to the people of Gujarat, they generally lead a simple and unostentatious life. Despite economic prosperity, religion, tradition and culture play a significant role in their lives.

The population mainly consists of Hindus (90 per cent). Muslims form 9 per cent of the population; the rest are Christians, Jains and others. The literacy rate in the state is 45 per cent while the national average is 38 per cent. Sixty-eight per cent of the state's people live in rural areas. The birth and death rates in 1981 were 34.5 and 12.0 per 100 respectively, with a life expectancy of around 55.7 years for males and females. The infant mortality was 115.9 per 1000 live births.

The couple protection rates in 1981 in Gujarat state and India were 34.6 and 22.7 per cent respectively. By the end of March 1986, it went up to 51.3 per cent in Gujarat while for the country as a whole, it was 35 per cent. The state plans to raise its couple protection rate to 60 per cent by March 1991.

### *Thrust of IEC Activities in Gujarat*

Gujarat's IEC activities can be broadly classified as follows:

1. Mass media activities to create awareness.
2. Inter-personal activities through the extension network.
3. Population education in schools, colleges and for out-of-school youth.
4. Group communication to mobilise public opinion and resources.

The first three types of activities are more or less common to all the states in the country. But the last one, and the effort put into it distinguishes Gujarat from other states in relation to IEC activities. Group communication has reinforced mass media and inter-personal communication in the state and helped it to achieve better performance levels as compared to many other states.

This paper therefore, highlights the group communication activity in Gujarat state and indicates how all three types of communication are necessary to make the programme effective enough to achieve the desired results in a wider programme of social change.

### *1. Orientation Training Camps*

Any social change when endorsed and recommended by opinion leaders



becomes easily acceptable to the public at large. Hence, the active involvement of opinion leaders is essential for popularising the family welfare programme. Orienting opinion leaders has been an innovation of the state government's programme in Gujarat since the past two and a half decades.

The identification, training, and follow-up of opinion leaders is done systematically. Opinion leaders, such as village chiefs, traditional birth attendants, school teachers, representatives of women's and youth organisations, private medical practitioners, and other peripheral developmental workers are identified systematically. They are then trained for one-day camps, using various audio-visual and educational aids to explain the different aspects of birth control—why, how, and when—as well as other allied programme activities such as maternal and child health, immunisation, nutrition and communicable diseases. Their role as leaders in generating community participation is also stressed.

The process of training is through discussion and interaction. As a follow-up of the camps, IEC and service programmes are organised by the opinion leaders with the help of the people.

## *2. Mini Orientation Camps*

It has been learnt from field experience that the real change agents in the family welfare programme are traditional birth attendants, village health volunteers, primary school teachers, peripheral workers of the health and development departments, private practitioners of the allopathic, Ayurvedic and Siddha systems of medicine, satisfied family welfare acceptors, and local women volunteers. Mini orientation camps are organised for 20 to 25 of these change agents at a time, to provide an opportunity for interaction and discussion. These camps have helped in creating a favourable social climate for the acceptance of the small family norm.

## *3. Group Discussions and Meetings*

Group meetings are held to involve housewives, members of women's organisations and eligible males during the late evening hours when they are free, youth and mothers-in-law in the neighbourhood. To remove misconceptions and fears about family planning methods and also to involve them actively in the family welfare programme, audio-visual and educational aids are extensively used at these meetings. The group discussions are followed up by health workers and development workers through individual counselling. Talking points and issues are prepared, pre-tested, finalised, printed and given to the health and family welfare and development workers.

The following communication aphorisms have been developed in Gujarat, from the experience gained through the orientation and mini orientation camps and group meetings.

If you listen, you forget easily  
If you see, you will remember a little longer  
If you demonstrate and discuss, you learn by heart.

#### *4. Village Health Committees*

Village health committees consisting of formal and informal village leaders and representatives of women's, youth and health organisations have been established in almost all the villages of the state. It has been experienced that these committees, if constantly activated, can help in bringing about the desired change in the health behaviour of the village folk, ensure the participation of the people's representatives in family planning, and ultimately help in increasing people's participation in the family welfare programme.

#### *5. Cultural Programmes*

Cultural programmes performed by local artists from the community attract large audiences. Therefore, local troupes of artists possessing different skills—dance, drama, skits, mimes, etc. have been identified, trained, involved and funded for performing shows on family planning themes. The programmes of these artists are effective because the performance is in keeping with the local, culturally acceptable milieu and the subject matter is made relevant to the problems of the common man.

#### *6. Early Morning Processions and Arogya Jyot*

Early morning processions or 'Prabhat Pheri' is a cultural heritage of Gujarat. It is used to create public awakening and generate people's participation in any serious public issue. 'Arogya Jyot' is a similar form of public participation, similar to the torch carried from place to place by marathon runners. Both 'Prabhat Pheri' and 'Arogya Jyot' programmes are regularly organised in villages and towns to constantly remind the public and draw their attention to the family welfare programme.

#### *7. Involvement of Non-Governmental Organisations*

A number of non-governmental organisations have been identified, and oriented to increase their participation in the birth control programme. State-level voluntary organisations such as the Indian Medical Association, Branches of the Family Planning Association of India, All India Women's Conference, etc. are identified and encouraged. As a result, 107 of the state's 140 urban family welfare centres (76.4 per cent) are being run by non-governmental organisations. In Gujarat, the state branch of the Indian Medical

Association has imparted training in family welfare to its members on a large scale.

These non-governmental organisations have played a very vital role in the organisation of IEC activities and service camps in collaboration with the health department, in collecting funds, and by offering incentives and awards to both motivators and acceptors of family planning.

### ***8. Mobilisation of Financial Support***

Normally, most of the development programmes remain purely as government programmes because of their total dependency on the government for money and administrative infrastructure. Further, donations come easily for hospitals and medical equipment, but not for a social change programme like family planning. Gujarat made a unique achievement by raising funds from different non-governmental organisations (industrial sector) indicating another active form of public participation in the family welfare programme.

District Family Welfare Funds have been established in each district. Donations to these funds come from panchayats, cooperatives, non-governmental organisations and individuals. Every year about Rs. 10 million are received as donations for family welfare. Funds have also been collected by selling Family Planning seals provided by the Gujarat State Branch of the Indian Red Cross Society, publishing souvenirs, organising 'film star nites'.

Encouraged by the response to the fund raising activities in the districts, a State Family Welfare Fund has been established recently to collect Rs. 30 million in the ensuing one year for family welfare activities.

### ***9. Recognition***

Recognition is another incentive for ensuring the participation of the people. The state is divided into geographical areas and grouped into high, medium and low performance areas. A variety of awards for individuals and institutions are instituted every year to recognise their contribution to the family welfare programme. Awards worth Rs. 4 to 5 million every year, in the form of cash, shields, mementoes, etc., are distributed to the panchayats, institutions, officials, non-officials, social workers, voluntary organisations and departmental workers. 'Community incentives' and awards are emphasised to generate greater community participation.

### **A Communication Model for Making the Family Welfare Programme a People's Programme**

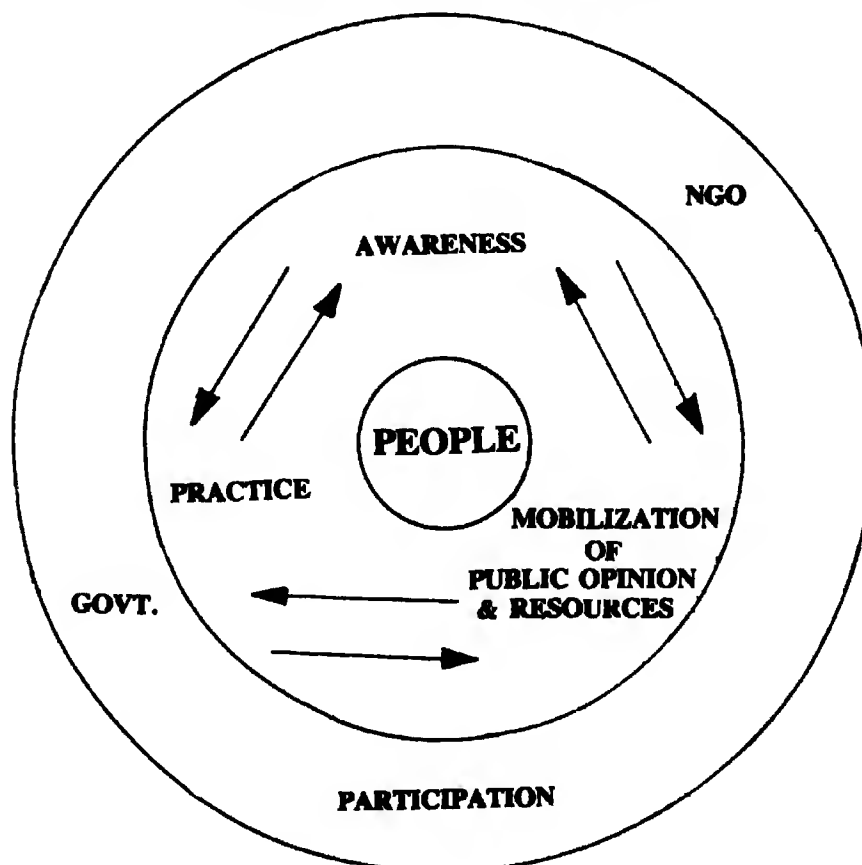
The introduction of change in any society attains success only when it attracts people's participation and becomes a people's programme to the extent of shedding the motive force of the original agencies—governmental and

non-governmental—and makes demands on the established institutions to satisfy the new way of life. It is in this sense that the Gujarat state has been striving to make the family welfare programme, a people's programme.

In its IEC efforts, Gujarat has introduced the mobilisation of public opinion and resources as a third communication dimension to the traditional ones of building awareness and reinforcing practice. It has combined mass media techniques (both traditional and modern) for creating awareness with group meetings and discussions for mobilising public opinion, and strengthened the delivery system as well as the practice of family planning through sustained face-to-face communication.

This three-dimensional communication approach has proved to be inter-related and interactive. Each dimension reinforces the other. The absence of any one of them explains the low level of efficiency and achievement of targets in other states. This three-dimensional communication approach could be represented in a self-feeding model showing three stages (levels) of people's participation based on India's experience in general and Gujarat's experience in particular as shown below:

#### SELF-FEEDING MODEL SHOWING THREE STAGES OF PEOPLE'S PARTICIPATION



Political, voluntary, and social institutions functioning in society play a very important role in influencing public opinion. Hence it becomes imperative to mobilise these institutions to obtain greater public acceptance and participation. Today, the taboo of talking publicly about human reproduction and contraception has almost disappeared in Gujarat. The message of using the condom by the male or the intra-uterine devices by the female is freely communicated to the people through mass media like the radio, television, films and the press. Such a stage in the process of social change could not have been reached without the active support of formal and informal public opinion leaders and policy makers.

The alternative to mobilising public opinion is force. It has the advantages of bringing in quick results for a short period. But the disadvantage is that when public antagonism mounts, particularly in a democratic set-up, assuaging public opposition takes a much longer time. During the emergency period (1975-77) in India, efforts were made to push the birth control programme too fast to achieve quick and remarkable results. In some states, especially in the northern states, administrative pressure was used to boost up the acceptance of permanent methods. As a result, the acceptance of terminal methods shot up in these states. However, as soon as the emergency was lifted the performance showed a sharp decline. Some states like Gujarat did not resort to any kind of force or pressure. As a result, the birth control programme did not suffer in Gujarat. Appendix I shows the sterilisation performance of the Northern and Central Zone states, and Gujarat state during the emergency period and thereafter. The experience of Gujarat state has demonstrated that intensive IEC programmes help in generating a lasting people's participation and in putting the family welfare programme on a sound footing, thereby making it truly a people's programme.

Creating awareness, generating public opinion, and accelerating acceptance are interdependent and continuous processes. Each of these can be neither quantified nor classified separately. But without the bridge of mobilising public opinion leaders and non-governmental resources, awareness and delivery activities themselves may not be enough to obtain rapid and permanent change.

#### ACKNOWLEDGEMENTS

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## APPENDIX I

### Sterilisations performed in Northern and Central Zone States and in Gujarat- A comparative analysis of pre and post-emergency periods

Name of the Northern/ Central Zone State	Sterilisations during emergency period				Sterilisations during post- emergency period			
	1975-76		1976-77		1977-78		1978-79	
	Number	%	Number	%	Number	%	Number	%
Haryana	57942	128.8	222738	428.3	5976	12.0	13914	27.5
Punjab	53083	123.2	139905	300.9	13048	20.1	20530	22.6
Himachal Pradesh	16832	90.5	100740	319.8	1811	7.2	6994	32.2
Jammu and Kashmir	9502	55.9	18351	59.2	6426	25.7	9256	24.7
Rajasthan	86257	81.3	364760	208.4	12636	6.3	20884	10.4
Uttar Pradesh	128729	73.6	838071	209.5	13523	3.4	29255	4.3
Madhya Pradesh	112163	68.5	1002181	374.6	37166	10.6	80281	28.6
<b>Total</b>	<b>464508</b>	<b>81.7</b>	<b>2686746</b>	<b>267.7</b>	<b>90586</b>	<b>8.1</b>	<b>181114</b>	<b>13.2</b>
Gujarat	153023	83.9	317113	158.6	111803	55.9	197367	102.5

# **THE ROLE OF MASS MEDIA IN INTERSPOUSE COMMUNICATION AMONG URBAN MOMIN AND KOKNI MUSLIMS**

**DR. H.C. SRIVASTAVA<sup>+</sup>**

## **Introduction**

The mass media play a significant role in influencing married couples in the reproductive age group to adopt different measures of family size limitation. One of the ways in which it may operate is by stimulating husbands and wives to communicate among themselves about the number of children they can afford, the spacing between two successive births, and the choice of a suitable contraceptive for achieving the desired family size. Mass media also make people aware of the availability and utility of contraceptives and facilitate such information to enter into the cognitive map of the individual. According to Rogers<sup>1</sup>, "...the primary role of the awareness stage is to initiate the sequence of later stages that lead to eventual adoption or rejection of the innovation". Since introduction of modern contraceptives is a relatively new phenomenon in India, it may be considered an innovation. One may anticipate that a higher exposure to mass media would provide higher awareness among couples and this, in turn, may result in a higher probability of acceptance of methods for family size regulation.

## **Objectives**

The present paper aims to study (i) the extent of exposure of couples to different media with regard to family planning; (ii) whether couples exposed to various mass media communicated the message to their spouses, and (iii) the association between the extent of exposure of the couples to different mass media with their ethnicity\*.

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\* The term ethnic group is used here in the sense in which it has been used by Marriot who considers it to be a "...hereditary group within a society, or constituting a society which is defined by its members and by others as a separate people, socially, biologically and culturally it need not be distinguishable in objective fact by any unique complex of cultural or biological traits. For details see McKim, M., *Caste Ranking and Community Structure in Five Regions of India and Pakistan*, Deccan College Post-Graduate and Research Institute, Poona, 1960.

## **The Urban Setting**

The study was carried out in the industrial township of Bhiwandi—Nizampur Municipal area, well known for its powerloom industry. It is the administrative headquarters of Bhiwandi Tahsil of Thana district of Maharashtra state. The urban locale is situated at the Bombay-Agra National Highway at a distance of 51 kms. North-East of Bombay. Interestingly, for the past several decades, Muslims have constituted the majority of the total population of Bhiwandi town. According to the 1911 Census, the proportion of Muslims to the total population of Bhiwandi town was 58.62 per cent and since then, they have maintained numerical superiority over other religious groups.

The Muslims of Bhiwandi can be divided into two main ethnic groups—the Momins and the Koknis. The former constitute the largest proportion of the Muslim population of Bhiwandi whereas the latter occupy the second position in relation to the total Muslim population of the area. (There are also a few Khojas, Bohras, Memons etc., who constitute fragmentary proportions of the total Muslim population).

### *The Momins*

The Momins, the largest group among the Muslim population of Bhiwandi, trace their origin to the weaver or 'Julaha' community of North India—mainly from the districts of Azamgarh, Allahabad and Varanasi in Uttar Pradesh State. They claim to have come to Bhiwandi around 1857 when the British destroyed their traditional occupation—the handloom industry. The majority belong to the 'Sunni' sect of Islam. Prior to migration, they formed part of the Muslim social hierarchy of Uttar Pradesh and were placed in the 'Ajlaf'\* category<sup>2</sup>. They brought with them their perpetuated caste structure and socio-cultural values.

The Momins speak a dialect locally known as 'Poorbi' or Hindustani which is spoken in the eastern part of Uttar Pradesh, and contains sizeable words from the Urdu and Hindi languages. They are conscious of belonging to a larger group known as Biradari (the fraternity of the Momins). A few Momin families belong to the Shia sect who are the followers of His Highness Hazrat Ali. Another sect is of Wahabis who were converted nearly a hundred years ago and are strict in performing their religious duties. The Sunni, Shia and Wahabis form distinct communities each with a headman called Chaudhari to settle disputes. The Momins generally prefer arranged and endogamous marriages.

\* The 'Ajlaf' category refers to a convert Muslim especially from a lower Hindu caste.



Some of the Momins set up the traditional loom industry in Bhiwandi. Over the years, this has flourished and during the last two decades or so, has brought tremendous changes in socio-economic life. Some amongst them have acquired much wealth, and those who were earlier considered as of low and backward community in the area, have attained social and political status and hold important positions in political and commercial spheres.

Along with the expansion of the powerloom industry, the Momins accomplished measures of economic security and started sending their children to school. In spite of their economic prosperity, the majority of the Momins did not attach much seriousness to education. Although the enrolment of the Momin children has increased in primary and secondary schools in recent times, most Momin boys discontinue their studies and join their traditional loom industry or take up other activities. The majority of girls rarely continue beyond the Matriculation or Higher Secondary level because of their utility in the household.

In Bhiwandi, there are localities which are predominantly inhabited by the Momins. These are congested and relatively dirty. With the pace of time, economic prosperity, increase in literacy and their association with other fellow inhabitants, the influence of westernisation and modernisation has had its effect on the Momins. Besides, the proximity of the urban environment of Bombay and modern mass media particularly films, has brought changes in their socio-cultural life.

### *The Koknis*

The Koknis are the second largest and prosperous group among the Muslims of Bhiwandi. Despite the fact that they have increased in number due to in-migration and local conversion, they owe their origin to the Arab Persian refugees, merchants and adventurers who settled in the coastal areas during the eighth to tenth centuries. History reveals that their forefathers settled in Konkan before Muhammadan power was established (700-1300 A.D.). The Kokni Muslims are quite proud of their supposedly Arab descent and on this count, distinguish themselves from the other Muslims. Their foreign ancestry places them in the 'Asharaf'\* category.

The Kokni Muslims are ethnically distinctly different from other Muslims. They share a number of cultural features and characteristics; they marry among themselves, and speak the same dialect 'Kokni' which is structurally quite similar to Marathi but contains many Arabic and Persian words. Notwithstanding the similarities and commonness among them the Kokni Muslims have

\* The Muslims belonging to the 'Asharaf' category claim their descent from any of the four groups of foreign extraction viz., Sayyad, Shaikh, Mughal, and Pathan.

a well defined system of ranking and stratification, which is reflected not only in the rules of marriage but also in the burials. Those who distinguish themselves from the rest on account of purity of descent and ancestral nobility are placed on the top of the Kokni hierarchy.

The Koknis are quite hard working and their major occupation is rice cultivation, dairy farming and forestry which were quite paying. Of late, the growing prosperity and affluence of the Momins has tempted some Koknis to change over to the powerloom industry, which they once considered as lowly.

The impact of western education has been greater on the Koknis as compared to other Muslims of Bhiwandi. This is perhaps due to the fact that initially they were more socially and economically advanced. Western influence is seen in their dress, tasteful living style and use of modern amenities. Kokni women, specially young girls, are more fashionable than their Momin counterparts. Also, Kokni women enjoy relatively better social status. There are separate localities predominantly inhabited by the Koknis. Kokni houses are usually big and spacious and some of them are furnished tastefully.

### *The Sample*

The study sample was composed of 175 Momin and 100 Kokni\* eligible couples (currently married women aged 15-49 years, whose husbands' ages did not exceed 55 year) drawn from 163 Momin and 97 Kokni households selected on the basis of a two-stage stratified sampling plan. Care was taken to see that sample was representative of Muslims from both ethnic groups.

## **Results and Discussion**

### *Characteristics of the Respondents*

Some of the socio-economic and demographic characteristics of the respondents which are known to be relevant to mass media exposure and which play a significant role in interspousal communication for family planning, are presented in Table 1.

As far literacy and education was concerned, higher proportions of Kokni husbands and wives were educated upto the secondary level and above (their percentages being 60 and 46 respectively) as compared to Momin couples (52 per cent of husbands and 28 per cent of wives). Further, a higher proportion of the Kokni couples belonged to nuclear family households (51 per cent) while a higher proportion of Momin couples lived in joint family households (52.3 per cent). The majority of Momin husbands (90 per cent) were engaged in the powerloom industry as compared to Kokni husbands 57 per cent of whom were engaged in economic activities other than powerlooms. The majority of both Momin and Kokni wives stated that they

TABLE 1

## Characteristics of the respondents according to their ethnicity

Characteristics	Momins	Koknis
<b>Literacy &amp; education of the husbands:</b>		
Illiterate & educated upto primary level	84 (48.0)	40 (40.0)
Educated upto secondary level and above	91 (52.0)	60 (60.0)
<b>Literacy &amp; education of the wives:</b>		
Illiterate & educated upto primary level	126 (72.0)	54 (54.0)
Educated upto secondary level and above	49 (28.0)	46 (46.0)
<b>Family Type:</b>		
Nuclear	83 (47.4)	51 (51.0)
Joint	92 (52.6)	49 (49.0)
<b>Occupation of the husbands:</b>		
Engaged in powerloom	158 (90.3)	42 (42.0)
Business other than powerloom	10 (5.7)	30 (30.0)
Service	5 (2.9)	27 (27.0)
Unemployed	2 (1.1)	1 (1.0)
<b>Occupation of the wives:</b>		
Housewives	152 (86.9)	98 (98.0)
Engaged in powerloom	19 (10.9)	— —
Working other than powerloom	4 (2.3)	2 (2.0)
<b>Mean age at marriage (in years):</b>		
Husbands	23.2	24.5
Wives	17.1	18.3
<b>Mean no. of children ever born:</b>		
Standardised mean no. of children ever born:	4.46 4.33	4.26 3.93

were housewives. However, during data collection it was observed that Momin women usually assisted their male family members in the traditional loom industry.

The mean age at marriage for both girls and boys was higher among the Koknis. The mean number of children even born to Momin couples was also higher than for Kokni couples, even after standardising the value with respect to the age of the wife.

### *Exposure to Mass Media and Interspousal Communication*

Mass media which were found to be more popular in Bhiwandi such as the radio, films, posters, lectures, group meetings and booklets were selected for the analysis. In order to assess the extent of exposure of the couples to these media, specific questions were posed to husbands and wives separately, viz., their exposure to the media, whether information regarding family planning was received by them through the media, and if so, whether the same was communicated to their spouse or not.

### *Husband's Exposure to Mass Media and Communication with the Wife*

Table 2 presents a distribution of the husbands classified according to their exposure to various mass media for family planning and communication with their wives by their ethnicity. The analysis revealed that among all the media chosen for the study, the radio, films and posters were relatively more popular among husbands of both ethnic groups as sources of family planning knowledge. Further, most Momin and Kokni husbands (80 and 85 per cent respectively) were exposed to the radio; they received information about family planning through it and also conveyed it to their wives. Films and posters were found to be next to the radio as disseminators of family planning information.

It was observed that husbands who got such exposure had also shared this information with their wives (respective percentages for Momin and Kokni husbands being 79.4 and 80.0). Interestingly, the proportion of Kokni husbands exposed to each type of mass media as also of those who had communicated information so received to their wives was higher. This may probably be due to the relatively higher educational level of the Koknis and also the higher social status enjoyed by Kokni women as compared to Momin women.

In order to examine the association between exposure to different mass media with ethnicity and the association between the status of interpersonal communication among the spouses of the exposed as well as not exposed husbands to mass media, Table 2 was rearranged into 2 x 2 contingency tables; by considering those husbands who were exposed to and received family planning information through the media and conveyed it to their wives, and those

Distribution of husbands by exposure to mass media and interpersonal communication by ethnicity

Exposure	Monias	Koknis	Monias	Koknis	Monias	Koknis	Monias	Koknis	Monias	Koknis	Monias	Koknis
Exposed, information received and conveyed to wife	140 (80.0)	85 (85.0)	139 (79.4)	80 (80.0)	113 (64.6)	75 (75.0)	61 (34.9)	44 (44.0)	94 (53.7)	70 (70.0)	30 (17.1)	31 (31.0)
Exposed, information received but not conveyed to wife	18 (10.3)	9 (9.0)	17 (9.7)	5 (5.0)	17 (9.7)	10 (10.0)	2 (1.1)	4 (4.0)	3 (1.7)	7 (7.0)	1 (0.6)	—
Not exposed	16 (9.4)	5 (5.0)	18 (10.3)	14 (14.0)	44 (25.1)	14 (14.0)	111 (63.4)	51 (51.0)	77 (44.0)	22 (22.0)	143 (81.7)	68 (68.0)
Did not reply	1 (0.6)	1 (1.0)	1 (0.6)	1 (1.0)	1 (1.0)	1 (1.0)	1 (0.6)	1 (1.0)	1 (0.6)	1 (1.0)	1 (0.6)	1 (1.0)
Total	175	100	175	100	175	100	175	100	175	100	175	100

Figures in brackets denote percentages

\* Chi-square computed for 2X2 contingency tables from the categories exposed (1 & 2 combined) and not exposed (category 3) with ethnicity

\*\* Chi-square computed for 2 X 2 contingency table from the categories 1 & 2 as mentioned above with ethnicity.

$X^2_1(0.05) = 3.84$   $X^2 = 1.53$   $X^{2*}(0.05) = 3.84$   $X^2 = 3.94$   $X^{2**}(0.05) = 3.84$   $X^2 = .20$   
(Insignificant for Radio) (significant for Lectures) (insignificant for Radio)

$X^2 = 0.69$  (Insignificant for Films)  $X^2 = 6.55$  (significant for Booklets)  $X^2 = 1.67$  (Insignificant for films)

$X^2 = 1.88$  (Insignificant for Posters)  $X^2 = (0.01) = 6.63$   $X^2 = 13.25$   $X^2 = 0.08$  (Insignificant for posters)  
(Highly significant for Meetings)

$X^{2**}$  Values for Lectures, Meetings and Booklets not computed as cell frequency was less than 5.

who were exposed to and received family planning information but did not communicate it to their wives. With regard to the first group, the null hypothesis that there is no association between exposure to mass media and ethnicity was accepted in the case of the radio, films and posters (chi-square values were insignificant), but was rejected in the case of lectures, meetings and booklets (chi-square values were significant).

On the basis of these findings, it may be argued that since the educational level of the Koknis was relatively higher as compared to that of Momins, their exposure to various mass media was also greater. Their relatively higher general awareness could be another possible reason. Table 2 also suggests that exposure to media which requires some educational background (such as lectures, meetings and booklets), is associated with ethnicity.

The chi-square values computed for the second group revealed that the null hypothesis that there is no association between those husbands who were exposed to mass media, received information and conveyed it to their wives; and those who were exposed to the media, had received the required information but did not communicate it to their wives, was accepted for all the mass media considered here (Table 2). Based on these observations one may be tempted to conclude that a statistically significant association among the husbands by their ethnicity could not be observed as far as communication between the spouses regarding family planning information received through the mass media was concerned.

#### *Wife's Exposure to Mass Media and Communication with the Husband*

A distribution of the wives according to their exposure to various mass media for family planning and the status of communication with their husbands by ethnicity is presented in Table 3. The findings suggest that a majority of the Momin wives (42.3 per cent) were exposed to the radio, as opposed to a majority of Kokni wives (75 per cent) who were exposed to posters. Both had received information pertaining to family planning and conveyed it to their husbands. Their second largest source was films. Most of the Momin and Kokni wives were not exposed to lectures and meetings on family planning. This could be mainly because of the 'purdah' system as well as segregation of females which is very much the practice in Bhiwandi; female participation in lectures and meetings is not encouraged by the society on cultural grounds. A probable reason of the unexposed status of the females to booklets may be attributed to illiteracy or the low educational level among Muslim women in general.

In order to examine the association between the wife's exposure to different mass media with ethnicity and the association between interpersonal communication, Table 3 was rearranged into 2 x 2 contingency tables.

**TABLE 3**  
**Distribution of wives by exposure to mass media and interspousal communication by ethnicity**

Exposure	Radio		Films		Posters		Lectures		Meetings		Booklets	
	Momins	Koknis	Momins	Koknis	Momins	Koknis	Momins	Koknis	Momins	Koknis	Momins	Koknis
Exposed, information received and conveyed to husband	74 (42.3)	24 (24.0)	52 (29.7)	18 (18.0)	33 (18.9)	75 (75.0)	6 (3.4)	— (1.7)	3 (1.0)	1 (6.3)	11 (1.0)	1
Exposed, information received but not conveyed to husband	21 (12.0)	32 (32.0)	21 (12.0)	34 (34.0)	16 (9.1)	10 (10.0)	—	—	1 (0.6)	—	1 (0.6)	2 (2.0)
Not exposed	73 (41.7)	35 (35.0)	96 (54.9)	39 (39.0)	120 (68.6)	14 (14.0)	163 (93.1)	91 (91.0)	165 (94.3)	90 (90.0)	157 (89.7)	88 (88.0)
Do not reply	7 (4.0)	9 (9.0)	6 (3.4)	9 (9.0)	6 (3.4)	1 (1.0)	6 (3.4)	9 (9.0)	6 (3.4)	9 (9.0)	6 (3.4)	9 (9.0)
Total	175	100	175	100	175	100	175	100	175	100	175	100

Figures in brackets denote percentages

\* Chi-square values computed for 2 x 2 contingency table from the categories exposed (1 & 2 combined) and not exposed (category 3) with ethnicity (Momins and Koknis)

\*\* Chi-square values computed for 2 x 2 contingency table from the categories 1 & 2 as mentioned above with ethnicity.

$X^2_1(0.05) = 3.84 < X^2 = 0.6$   $X^{2**}(0.01) = 6.63 < X^2 = 18.99$   $X^2 = 16.52$   
 (Insignificant for Radio) (Highly significant for Radio; contingency coeff. = 0.13) (Highly insignificant for films; contingency coeff. = 0.34)

$X^{2*}_1(0.05) = 3.84 < X^2 = 4.61$   $X^2 = 8.67$  (Highly significant for Posters; contingency coeff. = 0.24)

(significant for Films contingency coeff. = 0.13)

$X^{2*}_1 = 6.63 < X^2 = 8.75$

Chi-square values have not been calculated for Lectures, Meetings & Booklets because

The null hypothesis that there is no association between exposure to the mass media among Momins and Koknis was accepted in the case of the radio, the chi-square value being insignificant at a 5 per cent level of significance. However, it was rejected in the case of films and posters, the chi-square values being significant and highly significant, respectively.

The chi-square values were found to be highly significant when computed for the null hypothesis—there is no association between those wives who were exposed to media, received information and also conveyed the same to their husbands according to ethnicity, in relation to the radio, films and posters (Table 3). Therefore, a statistically significant association may be inferred among the wives of the two ethnic groups as far communication between the spouses about family planning is concerned.

### Summary and Conclusions

The extent of exposure of Muslim couples and interspousal communication on family planning matters to various mass media with regard to family planning information was studied in relation to their ethnicity.

It was observed that of the different media studied, the radio, films and posters were among the sources of family planning information among both Momin and Kokni husbands. Interestingly enough, for each media, higher proportions of Kokni husbands who had been exposed to, and received family planning information, had conveyed the same to their wives. This could be related to the higher educational levels of the Koknis as compared to the Momins, as also the relatively higher social status of Kokni females and better housing facilities (bigger and spacious houses) which may be conducive to exposure to media and interpersonal communication. Further, in the case of husbands, no association was observed between ethnicity and media such as the radio, films and posters, whereas, lectures, meetings and booklets were positively associated.

Among the wives, the majority of Momin wives was exposed to and had received family planning information from the radio and conveyed the same to their husbands. Besides, films were also found to be effective in disseminating family planning knowledge. On the other hand, the majority of Kokni wives were exposed to posters, obtained information regarding family planning through them and conveyed it to their husbands. Statistically, no association was found between the wives' exposure to the radio among the Momins and the Koknis. On the contrary, in the case of films and posters, a positive association was found among the wives of both ethnic groups. There was a highly significant association between the wives' exposure to various mass media and interspouse communication pertaining to the same in the case of radio, films and posters, among both the ethnic groups.



In view of these observations, it may be concluded that family planning communication through the mass media would be more effective among Muslim couples if simultaneous efforts are made to raise their social and economic status particularly by increasing their educational level, so that there is a better understanding of the small family concept.

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# **DIFFERENCES IN BREAST-FEEDING PRACTICES BETWEEN FAMILY TYPES IN A TAMIL NADU VILLAGE**

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The presence of a member or members in a family, other than those of the nuclear family have been found to influence social and demographic behaviour. Breast-feeding practices are not an exception to this. Reviewing available literature McCann et al<sup>1</sup> found evidence for both favourable and unfavourable effects of the presence of such members on the duration of exclusive and total breast-feeding. This paper aims to study the effect of family type on the duration of exclusive and total breast-feeding as well as on the practice of scheduled or on-demand feeding and night feeding.

## **Data**

The data for this study were drawn from a recent sample survey on breast-feeding differentials and practices. The study village, Thondamuthur, which is about 15 kms. from Coimbatore city, had 932 households at the time of survey. A systematic sample of 311 households contacted had 120 women who met the criterion of having had at least one live birth during the last five years since the time of survey. Such a criterion was necessary to reduce the recall error on the one hand and to reduce incomplete cases on the other. While two women were out of the village during the entire period of data collection i.e. from December 1985 to January 1986, the investigator suspected the quality of the responses from two other women. Hence, the responses from 116 women have been analysed.

## **Definitions**

In the present study, a household consisting of a man and his wife with or without their unmarried children was called a nuclear family. Other households were defined as extended families, since our concern was whether any member other than a member belonging to the nuclear core was present or not. An infant fed with nothing but breast milk and of course, water, was

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referred by the term full breast-feeding. Total breast-feeding on the other hand, referred to breast-feeding with or without supplementation. The period during which a child was breast-fed at least twice a day, was taken as the total breast-feeding duration.

Breast-feeding of the child at fixed times or at equal intervals of time in a day was referred to as scheduled feeding. The other type, called 'on-demand' feeding referred to the situation when the child was fed without following a definite schedule and/or whenever the child cried. If the infant was breast-fed at least once between 9 p.m. and 6 a.m. the mother was said to practice night-feeding.

### Findings and Discussion

Irrespective of whether a mother resided in a nuclear family or in an extended family, she was found to initiate breast-feeding. Other studies<sup>2,4</sup> have also shown that initiation is universal unless constrained by the ill-health of the mother or the infant.

On average, mothers in extended families continued to exclusively breast-feed their children about one month more than those in nuclear families (Table 1). However, they had an average duration which was 2.5 months less than that of mothers from nuclear families. It may be noted that these differences persisted even after controlling for either age or educational differences.

TABLE 1

Mean duration of exclusive and total breast-feeding for the last child born within the last five years

Type of family	Mean duration (in months) of	
	Exclusive breast-feeding	Total breast-feeding
Nuclear family	6.7	18.5
Extended family		
Unstandardised	7.6	15.9
Standardised for age	7.6	16.2
Standardised for education	7.5	15.5

Longer durations of breast-feeding by mothers from extended families has been attributed to the presence of other members who help the mother to breast-feed by doing her household chores or by earning an income for

the family.<sup>1</sup> Similarly, early supplementation and early weaning in an extended family situation has also been explained by the fact that other family members are likely to help the mothers with supplementary feeding.<sup>4</sup> The present study however, suggests late supplementation but an early end to breast-feeding among women in extended families as compared to those in nuclear families. A plausible explanation is that mothers from extended families may feel that the preparation of supplements is an additional burden to their already heavy household chores and therefore, tend to continue exclusive breast-feeding for some more time. Nevertheless, once supplementary feeding has been started, they may feel that there is no point in continuing breast-feeding which they have been finding difficult to do in the presence of extended family members. Therefore, they may prefer an earlier end to breast-feeding.

Though Table 2 clearly shows that demand feeding is predominant in both types of families, a higher percentage of mothers in extended families breast-fed their children with a schedule and a lower percentage breast-fed on demand, as compared to those in nuclear families. The association between type of family and feeding practice is significant only at a 10 per cent level. This finding also supports the earlier explanation. Hesitation to breast-feed in the presence of extended family members and/or heavy household chores may prevent the mother in an extended family from nursing the child whenever it cries. Hence, she may choose to breast-feed the child when she

**TABLE 2**

**Distribution of mothers according to breast-feeding practice and type of family**

Type of family	Scheduled feeding	On-demand feeding	Both	Total
Nuclear	5 (6.9)	56 (76.7)	12 (16.4)	73 (100)
Extended	8 (20.0)	24 (60.0)	8 (20.0)	40 (100.0)

Figures in brackets denote percentages

is relatively free and/or secures privacy. Further, while 92.5 per cent of the mothers in extended families practiced night-feeding, only 83.6 per cent of mothers from nuclear families did so. Though the difference between these two values is significant only at a 10 per cent level, it supports the above explanation, since night-feeding was preferred by mothers residing in extended families as it provided the privacy they desired. These findings have to be considered only tentatively until confirmed by further elaborate studies with larger samples.

### Summary

Mothers in extended families continued exclusive breast-feeding for a longer duration but discontinued it earlier than those from nuclear families. The proportion of mothers following scheduled feeding and night feeding was higher among extended families than among nuclear families. Heavy household chores and lack of privacy among mothers in extended families are expected to be responsible for the above findings. Further elaborate studies with larger samples are suggested.

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# **A SCALE TO MEASURE THE ATTITUDE OF ADULT EDUCATION PROGRAMME ORGANISERS TO POPULATION EDUCATION**

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Population education in a broad way can be defined as "an educational programme which provides for a study of the population situation in the family, community, nation and the world, with the purpose of developing in the students, rational and responsible attitudes and behaviour towards that situation."<sup>1</sup> The National Seminar on Population Education held in Bombay in August 1969 defined it in terms of objectives: "The objective of population education should be to enable the students to understand that family size is controllable, that population limitation can facilitate the development of a higher quality of life in the nation, and that a small family size can contribute materially to the quality of living for the individual family. It should also enable the students to appreciate the fact that for preserving the health and welfare of the members of the family, to ensure the economic stability of the family and to assure good prospects for the younger generation, Indian families of today and tomorrow should be small and compact".<sup>2</sup>

Population education is aimed at providing an awareness of the population problem in the broad perspective of building a social order of equality and economic justice leading to a welfare state through the process of internalisation of positive attitudes and emphasising the belief that man can control and determine the course of action of himself, of his family and of his country.<sup>3</sup>

Population education is an educational programme that is intended to influence the attitudes and practice of people in respect of population matters. Many investigations have shown that knowledge influences attitudes and attitudes influence practices. Such being the case, if education in population matters is given, it is likely to affect favourably the practices pertaining to population matters. Population education, therefore, becomes a pre-condition for desirable practices in population matters.

The National Adult Education Programme (NAEP) was launched, special-

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ly for illiterate persons in the 15-35 age group, to impart literacy, functionality and awareness. The adult education programme organiser is not only the teacher of literacy but also the generator of awareness and the disseminator of functional information. This means that the organiser has to generate awareness about crucial national problems like the population explosion, illiteracy, poverty, malnutrition, unemployment and underemployment, etc. To create awareness in these areas among the learners, the organiser must have a favourable attitude towards these problems.

The organisers are the backbone of the educational movement and the success of any developmental programme depends upon the attitude and involvement of the people by whom it is implemented and for whom it is designed. Attitudes differ from person to person depending upon their experience with the community and with people. If the organisers do not have a positive attitude towards any problem they cannot discharge their duties in an effective manner. Since there was no attitude scale specially constructed for measuring the attitudes of adult education programme organisers towards population education, an attempt was made to construct such a scale for the purpose (see Appendix). Likert's<sup>4</sup> method of attitude scaling was adopted.<sup>5</sup> The Likert-type attitude scaling was preferred to Thurstone's equal-appearing interval scale because it is easier to construct, is time-saving and has a high reliability over Thurstone's.<sup>6</sup>

## **Test Development and Administration**

### *Collection of Items*

The first step in developing the scale was to collect a set of statements in such a way that acceptance or rejection of each one would imply a different degree of favourable or unfavourable attitude towards population education. For this, a large number of statements on each aspect of the attitude object namely, Population Education, was collected from various sources such as relevant literature, experts in the field and organisers, supervisors and project officers of the adult education programme. Thus, a total of 96 statements were collected.

### *Editing of Items*

The editing process is more important in the Likert technique as there is no objective check on the ambiguity of the statements, analogous to the quartile deviation in the Thurstone method. The items were thoroughly screened and edited. The language of the items was improved so as to make them meaningful. The statements were reviewed and edited in accordance with

the guidelines suggested by Edwards<sup>7</sup>, Likert<sup>8</sup> and others which are as follows:

- a) The statement should be clear, short and simple.
- b) The statement should be so worded that it can be endorsed or rejected.
- c) Statements that are factual or capable of being interpreted as factual should be avoided.
- d) Statements which are irrelevant to the attitude available to be measured should be avoided.
- e) Double-barreled statements should be avoided.
- f) Each statement should contain only one complete thought.
- g) Statements containing universal words, such as all, always, none and never, which often introduce ambiguity should be avoided.

After elimination of items which did not fulfil the above criteria, out of an initial collection of 96 items, 76 statements were retained. Of these, 40 were positive (favourable) and 36 were negative (unfavourable), and thus represented different shades of favourable and unfavourable attitudes towards the issue. The statements covered the following aspects of population education:

- a) Attitude relating to the population limitation programme (perceived as huge, less, problematic, etc.)
- b) Attitude relating to the population limitation programme (family size, small or big, advantages and disadvantages)
- c) Attitude relating to the consequences of population growth (social, economic and ecological)
- d) Attitude relating to family planning (faiths, beliefs, values, traditions, etc.)
- e) Attitude relating to population education (inclusion in the adult education curriculum; work-load of organisers, etc.)

#### *Try-out of Attitude Scale*

The attitude scale thus prepared was tried out on 165 organisers working in the adult education project at Kamalapuram block in Cuddapah district of Andhra Pradesh state, with instructions to respond on a three-point measure (agree: 3; uncertain: 2; and disagree: 1) by encircling the corresponding number. Both sexes were included in the sample.

#### *Scoring of Items*

The items (statements) were scored in accordance with the general practice by assigning the following numerical values to positive and negative statements as shown below:



TABLE 1

## Scoring method

	Agree (A)	Uncertain (UC)	Disagree (DA)
Positive or favourable items	3	2	1
Negative or unfavourable itmes	1	2	3

The score of each individual item was computed by summing up the weights of its response. The range of the scale, under the present scoring system was 76-228.

*Selection of Items*

Under Likert's method, the final selection of items can be done by some form of item analysis. As the study was conducted on 165 organisers, a group of 45 respondents (27 per cent) with the highest total scores constituted the 'high' group and a group of 45 (27 per cent) respondents with the lowest total scores formed the 'low' group. These 'high' and 'low' groups were selected to be the criterion groups for calculating the critical ratio for each item. The sample size in the present study being 165, the frequency of the 'high' group, i.e. 45 (XH), and that of the 'low' group, i.e. 45 (XL) were equal and therefore, the critical ratio was calculated by the following formula suggested by Edwards:<sup>7</sup>

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum (X_H - \bar{X}_H)^2 + \sum (X_L - \bar{X}_L)^2}{n(n-1)}}$$

where

$$\sum (X_H - \bar{X}_H)^2 = \sum X_H^2 - \frac{(\sum X_H)^2}{n}$$

$$\sum (X_L - \bar{X}_L)^2 = \sum X_L^2 - \frac{(\sum X_L)^2}{n}$$

$\sum X_H^2$  = the sum of the squares of the individual scores in the 'high' group

$\Sigma X_L^2$  = the sum of the individual scores in the 'low' group

$\bar{X}_H$  = the mean score of a given statement for the 'high' group

$\bar{X}_L$  = the mean score of a given statement for the 'low' group

$n$  = the number of respondents in each group

The application of this formula is illustrated with reference to the data pertaining to item number 4 of the attitude scale on population education.

TABLE 2

## Calculation of Critical Ratio

Response categories	High group				Low group			
	x	f	fx	fx <sup>2</sup>	x	f	fx	fx <sup>2</sup>
Agree	3	38	114	342	3	18	54	162
Uncertain	2	3	6	12	2	3	6	12
Disagree	1	4	4	4	1	24	24	24
Sum		45	124	358	45	84	18	
		$n_H$	$\Sigma X_H$	$\Sigma X_H^2$		$n_L$	$\Sigma X_L$	$\Sigma X_L^2$

$$\bar{X}_H = \frac{124}{45} = 2.755 \quad X_L = \frac{84}{45} = 1.865$$

$$\Sigma (X_H - \bar{X}_H)^2 = \frac{(124)^2}{45} = 358 - 341.68 = 16.32$$

$$\Sigma (X_L - \bar{X}_L)^2 = \frac{198 (84)^2}{45} = 198 - 156.8 = 41.2$$

$$T = \frac{2.76 - 1.87}{\sqrt{\frac{16.32 + 41.2}{45(45-1)}}} = \frac{0.89}{\sqrt{\frac{57.52}{1980}}} = \frac{0.89}{0.170} = 5.235 \quad t = 5.235$$

The 't' values were similarly calculated for all the items used in the study. The 't' values for the individual items used in the scale are given in Appendix 1.

As suggested by Edwards<sup>6</sup>, the thumb rule for rejecting items with a 't' value less than 1.75 was followed. Based on this criterion, items with equal or greater values than 1.75 were chosen from the scale developed. The positive items with serial numbers 1 (0.0000); 2 (0.963); 9 (0.449); 12 (0.808); 13(1.291); 18(1.247); 20(0.164); 26(0.657); 39(1.398); 40(1.084); 43(1.571); 49(1.471); 56(1.716); 68(1.521); 69(1.191); 72(1.361), and the negative items with the serial numbers 5(0.578); 19(1.265); 66(0.238); 70(0.666) and 76(1.297) in the draft scale on population education were rejected. Thus 16 positive items and five negative items were dropped from the scale. Fiftyfive statements, of which 24 were positive and 31 negative, were retained. The items were arranged in descending order of item total correlations. In order to strike a balance between positive and negative statements, seven negative statements, the 't' values of which were comparatively lower than the remaining negative statements, were also deleted. They were items with serial number 10(1.878); 11(2.338); 41(2.830); 44(2.567); 47(2.570); 62(2.397) and 64(2.250). Finally, only 48 items were retained in the attitude scale on population education.

### **Reliability of the Test**

#### ***Split-half Method***

The scale was administered to a group of 90 NAEP organisers. In this method, the test was divided into two halves by pooling the scores on odd-numbered and even-numbered items<sup>8</sup>. The correlation between the two halves were calculated by Pearson's product moment method i.e., the half-test correlation co-efficient was obtained from the equated forms. The correlation co-efficient was found to be 0.91 (Table 4). This proved that the content of the scale was significantly homogenous. Thus, it may be said that the scale is a reliable tool for measuring attitudes of organisers towards population education.

#### ***Validity Consideration***

Both content validity and item validity were established for the attitude scale.

##### ***a) Content validity***

Literature pertaining to the scale areas was consulted and an attempt was made to see that the items included in the scale were representative of all the areas of population education. The instrument was subjected to the scrutiny, criticism and comment of experts in the field of population education and adult education. The scale was modified in the light of their comments and criticism. Thus, it may be said that the scale possessed content validity.

b) *Item validity*

Item validity emphasises the extent to which an item predicts segregation of examiners into those with high versus low criterion scores. A discriminating index was prepared for all the items and those items having a high discriminating power of 1.75 or more, were retained in the final test. Hence, the scale has item validity.

TABLE 4

Scattergram of scores on 'odd' and 'even' numbered items

	'Even-item Scores' (X-variable)							fy
	29-35	36-42	43-49	50-56	57-63	64-70	71-77	
71-77					1	4	1	6
64-70					2	15	4	21
57-63		1	1	8	9			19
50-56			9	9	12			30
43-49	1	3	1	5				
36-42	2	3	3					8
29-35	1							1
fx	3	5	16	18	24	19	5	90

$$\sum fy^1 = 55 \quad \sum fx^1 = 42$$

$$\sum fy^{1^2} = 203 \quad \sum fx^{1^2} = 208$$

$$\sum fy^1x^1 = 174 \quad N = 90$$

$$r = 0.9112$$

*Face validity*

It may be said that the scale fulfilled the requirements of face validity for it was designed to measure the attitudes of NAEP organisers towards population education. Also, when the test was shown to a few lay persons who had no knowledge of the construction of attitude scales, they felt that it measures attitudes towards population education. Even from this point of view, it may be said that this scale fulfills face validity requirements.

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## APPENDIX 1

## 't' values of the item in the attitude scale: Population Education

Sr.No. of the item (+ve or -ve item)	't' values	Sr. No. of the item in the final scale	Remarks
1	2	3	4
+ 1	0.000*	—	Rejected
+ 2	0.9632*	—	Rejected
+ 3	2.8480	31	
- 4	5.2350	18	
- 5	0.578*	—	Rejected
+ 6	2.119	43	
+ 7	2.018	47	
- 8	3.526	44	
+ 9	0.449*	—	Rejected
-10	1.878**	—	Rejected
-11	2.338**	—	Rejected
+12	0.808*	—	Rejected
+13	1.291*	—	Rejected
-14	3.782	42	
-15	4.207	32	
-16	4.503	28	
+17	3.422	21	
+18	1.247*	—	Rejected
-19	1.265*	—	Rejected
+20	0.164*	—	Rejected
+21	3.534	19	
-22	4.727	26	
+23	2.383	39	
+24	3.711	13	
-25	6.288	8	
+26	0.657*	—	Rejected
+27	5.346	1	

## APPENDIX 1 (Contd.)

## 't' values of the item in the attitude scale: Population Education

Sr. No. of the item (+ve or -ve item)	't' values	Sr. No. of the item in the final scale	Remarks
1	2	3	4
-28	3.916	36	
-29	3.515	46	
+30	3.287	23	
+31	3.279	25	
+32	4.207	7	
-33	3.857	40	
+34	2.688	33	
-35	3.367	48	
+36	4.093	9	
+37	2.634	35	
+38	5.115	3	
+39	1.398*	—	Rejected
+40	1.084*	—	Rejected
-41	2.830**	—	Rejected
-42	4.775	22	
+43	1.571*	—	Rejected
-44	2.567*	—	Rejected
-45	6.731	2	
+46	2.897	27	
-47	2.570**	—	Rejected
-48	5.213	20	
+49	1.471*	—	Rejected
+50	4.255	5	
-51	6.634	4	
-52	6.387	6	
+53	2.098	45	
-54	3.882	38	
+55	2.459	37	
+56	1.716*	—	Rejected
-57	4.482	30	
-58	4.127	34	
-59	5.349	14	
-60	5.718	12	
+61	3.708	15	
-62	2.397**	—	Rejected
-63	5.297	16	
-64	2.250**	—	Rejected
+65	2.874	29	

## APPENDIX 1 (Contd.)

**'t' values of the item in the attitude scale: Population Education**

Sr. No. of the item (+ve or -ve item)	't' values	Sr. No. of the item in the final scale	Remarks
1	2	3	4
-66	0.238*	—	Rejected
+67	2.205	41	
+68	1.521*	—	Rejected
+69	1.191	—	Rejected
-70	0.666*	—	Rejected
+71	3.679	17	
+72	1.361*	—	Rejected
-73	6.206	10	
-74	4.775	24	
+75	3.781	11	
-76	1.297*	—	Rejected

\* The values are less than 1.75

\*\* These items are rejected for want of equal number of positive or negative items

## APPENDIX 2

**Population Education Attitude Scale**

1. India's population is too large for its resources.
2. Every family is destined to have a certain number of children.
3. Malnourishment and undernourishment are due to over-population.
4. Medical termination of pregnancy is a sin
5. Natural methods of family planning should not be encouraged.
6. It is awkward to visit hospitals for contraception.
7. Over-population leads to social evils like hoarding and black-marketing.
8. India still has enough land for the increasing population.
9. Population control programmes should be given priority for the bright future of India.
10. As child is the gift of God, adoption of family planning is a great sin.
11. It is better if a family consists of 2 or 3 children irrespective of the sex of children.
12. Inclusion of population education in adult education programmes is a burden on instructors while teaching.
13. Over-population in India is one of the causes for deterioration of quality of environment.
14. Population education will lead adult learners to immorality and licentiousness.
15. Population education will enable the learners to understand the social problems of the country.
16. Population education adds to the over-crowding of adult education curriculum.

17. Population education will create an immediate favourable attitude in the minds of adult learners for adopting small family norm.
18. Mortality is increasing in India.
19. Over-population in our country gives rise to crime, lawlessness and disorder.
20. Family planning is not good.
21. Over-population in urban areas is caused by people migrating from rural areas.
22. Big families have less social problems.
23. Every citizen should be taught about the determinants and consequences of rapid population growth.
24. Modern techniques of family planning encourage infanticide.
25. Those nations which have controlled population growth have made more economic progress.
26. The present rate of population growth need not be reduced.
27. It is fair to insist on the minimum age at marriage for boys and girls.
28. National development of our country is not affected by overpopulation.
29. Population education paves the way for responsible parenthood.
30. Adult education centre is not a proper place for imparting population education.
31. The world population can be stabilised.
32. Population increase is not the reason for the land holdings in rural areas to get fragmented.
33. India is forced to depend on foreign aid because of its large population.
34. Population education cannot be taken as one of the means to control population.
35. Every citizen of the country should understand the population problem.
36. Nature always provides the necessities for the evergrowing population of a country.
37. Small family ensures better availability of food, clothing and living space for each member of the family.
38. Rise in the age at marriage will lead to illegal sexual contacts.
39. The highly populated countries are facing the problem of slums, diseases and hunger.
40. The larger the population the better the security of a country.
41. Short-term training programmes on population education for instructors should be organised.
42. Registration of births and deaths is not legally obligatory.
43. Food problem in India is being caused by rapid population growth.
44. The present unemployment in India is not due to rapid population growth.
45. Family planning should be taught in adult education centres.
46. No religion supports the population control programme.
47. The present socio-economic problems in India are mainly due to rapid population growth.
48. Countries with stable population have come to grief.





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# **A PROSPECTIVE STUDY OF IUD ACCEPTORS IN PUNE: DOES REGULAR FOLLOW UP HELP?**

**Dr. S. KANITKAR +  
Mrs. I. KARANDIKAR ++  
Ms. M. SALVI \*  
and  
Ms. A. SOMAN \***

## **Introduction**

One priority of the Indian family planning programme during the decade of the 1980s has been to promote family planning among young couples and those who are in the process of family building. In other words, there has been a growing recognition of the need to promote non-terminal methods of contraception; among these the Indian experience has suggested the IUD to be both an appropriate and an attractive method—in that it is both safe and effective. During this decade, then, there has been an impressive increase in the number of IUD users in India; this is reflected in the programme of the Family Planning Association of India, in which a significant proportion of all new acceptors in each year have adopted the IUD (FPAI, 1988).

In general, the available evidence in India suggests that though the levels of use of non-terminal methods may be impressive, the pattern of use is often irregular. Of specific concern is the quality of use of non-terminal methods including the IUD; not only the extent to which they are effective, but also the extent to which they are continuously used. There is a body of literature which suggests that continuous and quality follow up are essential components, which both monitor the woman's physical reactions, if any, to the method, and also provide her with the necessary reassurance to reinforce her decision to use the method.

This study addresses precisely these issues among a sample of IUD acceptors in Pune. The study has two broad objectives. First, the intention is to study the pattern and quality of use of the IUD, in terms of side effects, continuation and attitudes—in other words who uses it, for how long and why. The second objective is to monitor the effect of continuous follow up on both continuation rates and on user attitudes to the IUD.

## **Data**

This paper reports the results of a unique prospective follow up study

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of 212 women who had IUDs inserted for the first time during February to December of 1986. All acceptors had been recruited by the Pune Branch of the Family Planning Association of India; every woman who had an IUD inserted during this period was selected for the study. Slightly more than half (53%) of all acceptors had the IUD inserted immediately following a medical termination of pregnancy.

Acceptors were followed up for a period of 12 months following IUD insertion. The sample was randomly divided into two groups. Every new client was alternately assigned to each group; about half of each group consisted of clients who had IUDs inserted immediately following MTP. About half of the total sample then ( $N=100$ ) was assigned to the control group to whom quarterly follow up visits were made. The other half ( $N=112$ ) were assigned to the experimental group to whom regular monthly follow up visits were made. The schedule of interviews was as follows: the control group was interviewed on the day of insertion, a week thereafter, at one, three, six, nine and twelve months following insertion. The experimental group was interviewed on the day of insertion, a week thereafter, and then at regular monthly intervals until 12 months following insertion.

Visits were made by investigators trained in counselling and follow up. Among both groups, investigators provided whatever information was elicited, allayed fears expressed and so on, but made no attempt to offer uncalled for advice or motivate against IUD removal. In contrast, among the experimental group, investigators paid more attention to reassuring the user and convincing the uncertain ones and their families of the benefits of continuing. Clearly, there was considerable overlap among these two types of visits. Both groups were followed up—though one more frequently than the other. Investigators did not deliberately withhold advice or information from the control group but were asked not to offer it unless expressly asked. The fact remains however that both groups received follow up—the difference lies in the extent and comprehensiveness or the frequency and content of these visits.

### **Profile of the Sample**

Table 1 presents the demographic profile of the sample. The results indicate that the typical IUD acceptor was aged 23.8 years and had 1.45 surviving children at the time of acceptance. This profile holds good for respondents of both the experimental and control groups. It is clear then that in general, the IUD has been used in this sample as a spacing mechanism.

Table 2 presents the distributions of acceptors by such social and economic characteristics as education, occupation and income. The results confirm that IUDs continue to attract populations who have had more than average levels

TABLE 1

**Demographic profile of IUD acceptors: Distribution of age and parity at acceptance, by group**

	Experimental	Control	Total
<i>Sample size(N)</i>	112	100	212
<i>Age</i>			
15-19	7.1	7.0	7.1
20-24	56.2	59.0	57.5
25-29	25.9	30.0	27.8
30-34	8.3	4.0	6.1
35+	2.7	0.0	1.4
Mean	24.2	23.6	23.8
<i>No. of surviving children</i>			
0	2.7	4.0	3.3
1	59.8	53.0	56.6
2	30.3	39.0	34.4
3	3.6	4.0	3.8
4	1.8	—	0.9
5+	1.8	—	0.9
Mean	1.47	1.43	1.45

of education: as opposed to literacy rates of 62.2 per cent and 80.5 per cent among females and males recorded for urban Maharashtra in the 1981 census (Registrar General, 1983), as many as 95 per cent of all acceptors in this sample, and 98 per cent of their husbands had some formal education. The modal level of education among both acceptors and their husbands is the higher secondary level.

The occupational and income distributions similarly suggest that IUD acceptors are of higher socioeconomic status than the average population of the area under study. For example, average monthly household income is Rs. 905, and ranges from Rs. 882 in the control group to Rs. 913 in the experimental. As far as husbands' occupations are concerned, as many as one third of each group are industrial workers; 23 per cent and 22 per cent respectively are in service or non-agricultural wage labour; about one sixth have their own businesses. On the other hand, the large majority of acceptors are involved in housework. About 16 per cent work, ranging from 12 per cent in the control group to 20 per cent in the experimental.

The results of Tables 1 and 2 suggest then that the demographic and socioeconomic characteristics of IUD acceptors are considerably different from those of the general population of the Pune area. First, they tend to be young



TABLE 2

**Selected social and economic characteristics of IUD acceptors: Education, occupation and income distributions by group**

	Experimental	Control	Total
<i>Sample size (N)</i>	112	100	212
<i>Education of acceptor</i>			
No formal education	6.2	4.0	5.2
Primary (1-4)	8.0	3.0	5.7
Secondary(5-9)	22.3	23.0	22.6
Higher Secondary(10-12)	33.9	47.0	40.1
College+	29.5	23.0	25.9
<i>Education of husband</i>			
No formal education	1.8	2.0	1.9
Primary (1-4)	1.8	1.0	1.4
Secondary (5-9)	17.0	11.0	14.1
Higher Secondary(10-12)	42.0	52.0	46.7
College+	37.5	34.0	35.8
<i>Occupation of acceptor</i>			
Industrial worker			
Wage labour	7.1	3.0	5.2
Service	11.6	9.0	10.4
Business	0.9	0.0	0.5
Housework	80.4	88.0	84.0
<i>Occupation of husband</i>			
Non-agricultural wage Labour	21.4	23.0	22.2
Industrial worker	33.9	35.0	34.4
Sales worker	0.9	3.0	1.9
Own business	18.7	14.0	16.5
Service	22.3	24.0	23.1
Unemployed	2.7	1.0	1.9
<i>Household income per month (in Rs.)</i>			
500	17.9	14.0	16.0
501-1000	36.6	36.0	36.3
1001-1500	13.4	23.0	17.9
1501-2000	15.2	18.0	16.5
2001+	17.0	9.0	13.2
Mean	913	882	905

and of low parity. Second, they tend to be of higher socio-economic status, in terms of education, and income. The experimental and control groups exhibit almost identical characteristics, confirming that they have been randomly selected.

### **Continuation, Failure and Removal**

Method failure refers to pregnancies occurring with the IUD in situ. A review of the literature suggests method failure rates in the range of 1-3 per cent at twelve months. The results, reported in Table 3, show that of the 212 respondents, a total of 7 women subsequently became pregnant. This indicates a crude failure rate of 1.9 percent at 6 months and 3.3 at twelve. Net life table rates correspondingly range from 1.9 at six months to 3.37 at twelve.

**TABLE 3**

**Failure, removal and continuation rates by group**

	Failure Rates		Removal Rates		Continuation Rate
	Crude	Life Table Net	Crude	Life Table Net	
<i>At 6 Months</i>					
Total	.0189	.0190	.1274	.1223	.8520
Experimental	.0179	.0178	.1339	.1279	.8479
Control	.0200	.0208	.1200	.1176	.8560
<i>At 12 Months</i>					
Total	.0330	.0337	.1839	.1737	.7771
Experimental	.0446	.0454	.1785	.1678	.7729
Control	.0200	.0208	.1900	.1825	.7809

Removal and expulsion rates are considerably higher, suggesting that this presents a far more serious problem in the pattern of IUD retention than does failure. Removal rates extend from .1223 at six months to .1737 at 12. At the end of one year then, about one quarter of all acceptors are no longer using the IUD as a result of failure or removal; continuation then is far less than the prescribed three years. The twelve month continuation rate is .777. The results suggest then that though the IUD is relatively effective, in that the failure rate is within the acceptable range, the protection it offers is less than ideal because it tends to be prematurely removed.

This raises the issue of frequent and well informed follow up. Failure, removal and continuation rates were recalculated for the experimental and control groups separately - that is, those who received monthly and more intensive follow up and those who received quarterly follow up visits respectively. The results are presented in Table 3. While failure rates can hardly be attributed to the sequence of follow up visits, it must be noted that the experimental group experienced a considerably higher failure rate than did the control group: net 12 month life table rates were 4.5 and 2.1 respectively.

Of more direct relevance to the objective of this study however are differences in rates of removal. The hypothesis is that with continued follow up and reassurance, the acceptor becomes more confident of the method, is more aware of the potential side effects, and more likely to withstand some of the more common and transitory side effects of the IUD such as changes in menstrual pattern, pain and so on. The results of this study lend very modest support to this hypothesis. The removal rate among the experimental group is only marginally lower than that experienced by the control group: net 12 month life table rates were 16.78 and 18.25 respectively.

### **Reasons for Removal**

The results of Table 3 showed that 12 month removal rates were only marginally lower among the experimental group relative to the control group. Further decomposition of reasons for removal offers some support for the argument that repeated follow up reduces the likelihood of removal for personal reasons. Table 4 presents a breakdown of the 39 cases whose IUDs were removed or expelled by cause of removal.

Of the 39 cases, as many as 15 or 38.5 per cent were removed for medical reasons (either infection or severe bleeding), and another 4 were expelled or displaced. The remaining 20 removals were made for personal reasons which could be influenced by frequent contact with field workers. Of the crude removal rate reported in Table 3, this decomposition indicates a rate of 1.9 per cent as a result of expulsion or displacement, 7.1 per cent for medical reasons, that is those not responsive to follow up, and 9.4 per cent as a result of personal reasons which are expected to be sensitive to repeated follow up.

The distribution of reasons for drop out reported in each group confirms the link between repeated follow up and continuation. Among the drop outs in the control group, as many as two thirds (68.4 per cent) did so for personal reasons, that is, against medical advice or because they no longer wished to space their births. The corresponding figure among respondents in the experimental group is about one third (35 per cent).

TABLE 4

**Reasons for drop-out (other than failure) by group**

	Experimental	Control	Total
<i>Total removals/expulsions</i>	20	19	39
<i>Distribution of reasons:</i>			
1. Expelled/displaced	3	1	4
2. Under medical advice (severe side effects, infection)	10	5	15
3. For personal reasons (side effects, no longer want to space, prefer other method)*	7	13	20
<i>Proportion of drop-outs for personal reasons</i>	3500	.6840	.5130
<i>Crude removal/expulsion rates</i>			
Expulsion/displacement	.0270	.0100	.0190
Medical reasons	.0890	.0500	.0710
Personal reasons	.0620	.1300	.0940
<i>Life table removal rates for personal reasons only</i>			
6 months Net	.0554	.0927	.0725
Gross	.0560	.0932	.0732
12 months Net	.0654	.1334	.0977
Gross	.0664	.1348	.0991
<i>Subsequent contraception by other method</i>	10	8	18

\*Includes of cases (1 each for experimental and control group) who chose to be sterilised

Removal rates for personal reasons were calculated separately in order to distinguish the contribution of regular follow up and counselling. The crude 12 month removal rate for personal reasons is 6.2 among the experimental group respondents and 13.0 in the control group. Six and twelve month life table rates indicate that even by six months, the effect of frequent follow up is evident. The net removal rate for personal reasons for the total sample ranges from .0725 at six months to .0977 at 12. However, among respondents in the experimental group, corresponding figures are considerably lower: .0554 and .0654 respectively. In contrast, among respondents in the control

group, the six month removal rate now is .0927 and increases to .1348 by 12 months. These results clearly suggest that once factors which are insensitive to follow up and counselling are excluded, the positive effect of repeated follow up and counselling becomes quite apparent; sustained follow up is in fact an important deterrent to drop out for non medical reasons and is thereby a significant factor contributing to the sustained use of the IUD.

### Side Effects and Complaints

Side effects and complaints were recorded for each respondent at each visit, beginning with one week following insertion to twelve months thereafter. The main complaints concerned menstrual problems, pain and white discharge. Table 5 presents the breakdown of complaints and side effects reported by respondents at one, three, six, nine and twelve months following IUD insertion respectively. It is clear that leucorrhoea was experienced by a small minority at each visit (under 5 per cent) and the proportion remained virtually constant over the year. In contrast, menstrual problems and pain were experienced by considerably larger proportions and were in fact less likely to be experienced over time. For example, complaints regarding heavy bleeding were made by 42 per cent of the total sample at one month following insertion, but by only 13 per cent at the end of the year. Pain was also reported by 42 per cent of the sample at one month, but reduced to 24.8 per cent of the sample by the end of the year.

TABLE 5

Distributions of side effects and complaints upto 12 months following insertion, by group

	Total				Experimental				Control			
	N	Heavy bleed- ing	Pain	White dis- charge	N	Heavy bleed- ing	Pain	White dis- charge	N	Heavy bleed- ing	Pain	White dis- charge
One week to												
1st Month	204	42.2	42.2	4.9	105	39.0	42.0	5.7	99	45.5	42.4	4.0
3rd Month	193	33.7	37.6	4.1	102	31.4	23.5	4.9	91	36.3	40.7	3.3
6th Month	175	25.7	31.4	4.6	93	26.9	19.2	4.3	82	24.4	45.1	4.9
9th Month	166	22.9	30.1	3.0	87	21.8	19.5	3.4	79	24.0	41.8	2.5
12th Month	153	13.1	24.8	2.0	81	9.9	17.3	1.2	72	16.7	33.3	2.8

Table 5 also presents these complaints separately for the experimental and control groups. As indicated earlier, all respondents were subjected to the same schedule of visits until one month; therefore any differences observed at this point cannot be attributed to the pattern of follow up. It is only at

visits following this, that is, at months three, six, nine and twelve that the schedule of follow up visits differed for the two groups. In this case, differences are observed and in the expected directions. First, as in the case of the total sample, leucorrhoea is reported by a small minority of each group and its incidence does not vary either with repeated follow up or with time.

The positive effect of frequent follow up visits is observed in the case of reports of heavy bleeding and pain. As far as complaints of heavy bleeding are concerned, these were reported by 39 per cent and 45 per cent of the experimental and control groups respectively at one month following insertion. While these complaints progressively declined among respondents of both groups, their incidence not only fell more rapidly among the experimental group but were reported by a significantly smaller proportion at twelve months than among the control group (9.9 per cent and 16.7 per cent respectively).

Even more notable is the group specific pattern of reports of pain. At one month following insertion, as many as 42 per cent of each group (42 per cent and 42.4 per cent among the experimental and control groups respectively) reported severe pain in the abdomen or lower back. By the third month, this proportion had fallen considerably to 23.5 per cent among the experimental group, but had hardly changed (to 40.7 per cent) among the control group which had not benefitted from repeated follow up in the interim period. Among this latter group, the proportion reporting pain remained constant until the last visit at twelve months: at this point about one third continued to report severe pain. Among the experimental group, on the other hand, a steady decrease in the reporting of pain has been observed; at the end of the year, pain was reported by about one sixth of this group (17.3 per cent).

Aside from complaints regarding physical discomfort, there is qualitative evidence that these follow up visits served both to dispel misconceptions regarding side effects and to change attitudes among the acceptor and sometimes her family towards the IUD. Among the more commonly expressed fears at the initial stages were that the IUD is associated with cancer; that it travels inside the body and can damage other organs; that after its removal, the woman is likely to experience miscarriages. It was only through regular follow up at early stages that these misconceptions could both be expressed and corrected.

These results offer some support to the hypothesis that sustained follow up does in fact play a role in reassuring acceptors by monitoring their side effects, providing them with comprehensive information on the kinds of reactions which might occur and supporting them in the face of household opposition.

## **Conclusion**

The results confirm that the IUD is by and large an effective means of

contraception; failure rates associated with its use are within the acceptable bounds. While 12 month removal rates are considerably higher than failure rates, they are nonetheless lower than those observed in other studies. Continuation rates suggest that over three quarters of the sample retained the IUD for a full year. This is possibly a result of the fact that the entire sample had the benefit of at least quarterly follow up visits by trained investigators. Even then, the results confirm that removal for personal reasons is significantly lower among those who benefitted from monthly follow up visits than those who were visited quarterly. Repeated follow up also affects the quality of use; those exposed to repeated follow up are consistently less likely to report side effects. .

From these results emerge several interesting implications for the family planning programme. Evidence has been presented which argues for systematic and comprehensive follow up services for non-terminal methods. That acceptors of non-terminal methods respond to and rely on repeated reinforcement and counselling in order to overcome minor side effects and discomfort is implied by this study.

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# **IMMUNISATION KNOWLEDGE OF ACCEPTORS AND PRACTICE OF FAMILY PLANNING**

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## **Introduction**

The launching of the Expanded Programme on Immunisation (EPI) by the World Health Organisation in 1974 for the protection of children against the six deadly diseases, viz. diphtheria, pertussis, tetanus (commonly called DPT), tuberculosis, measles and poliomyelitis, was an important landmark. In the pre-vaccine era, these diseases used to take a heavy toll of infants and children, and cripple for life, many others. Since the inception of the EPI, the governments of many countries assigned a special priority to the immunisation programme so as to eradicate these diseases within a short time. India launched the EPI in 1978 and the Universal Immunisation Programme (UIP) in 1985, to accelerate the pace of immunisation, the *raison d'être* of the latter being an immunisation coverage of 85 per cent of all children by 1990.

The six diseases against which all-out efforts have been made in India through the expanded and universal immunisation programmes are, no doubt, deadly; but their incidence and mortality effect differ significantly. Tetanus, especially neonatal tetanus, remains the deadliest of all. As revealed by a survey conducted by the Registrar General<sup>1</sup>, tetanus caused 15.2 per cent of rural and 6.6 per cent of urban infant deaths, and 1.9 per cent of rural and 2.1 per cent of urban one-year-old child deaths in 1979. The data on mortality due to the other five diseases are not available, but fragmentary observations indicate that they are not as deadly as tetanus. In general, the high incidence of these and some other diseases such as typhoid, diarrhoea, etc. act in conjunction with nutritional deficiency to keep the infant mortality rate (IMR) of India still high. As of 1985, the infant mortality rate<sup>\*</sup> in India was 95<sup>2</sup>. This rate compares very poorly with that of developed countries such as Japan where the IMR has declined to around 10.

The direct intervention of the government in the health care of the mother

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\* In India there are high inter-state differentials in IMR: among the major states the rate in 1985 was found to vary from 32 in Kerala, the state with lowest mortality to 140 in U.P., the state with highest mortality.



and child (MCH) through the immunisation programme implemented at an accelerated pace will, no doubt, reduce infant and child mortality as well as post-partum and post-abortal maternal mortality. The achievement of success in the short run however will depend, among other factors, upon the active participation and understanding of the people for whom the programme is targeted. Evidently, the targets of the immunisation programme are expectant mothers and mothers with very young children. Since large numbers of Indians are still illiterate, and their behaviour and mores continue to be shaped by tradition rooted in the darkness of the past, the programme can only proceed slowly. The breakthrough will come only when people will begin to understand clearly the benefits of immunisation.

### **Objectives**

The purpose of this paper is to examine the extent of awareness and knowledge of immunisation among a group of acceptors. It also highlights the practice of family planning among the immunisation acceptors. One can surmise that a positive attitude and behavioural change towards one programme would also lead to a change in attitude towards other such developmental planning. The paper is divided into three sections: the first deals with the method of data collection, the second presents the major findings of the study, and the third discusses and summarises the findings.

### **Method of Data Collection**

Since the study aims to find out the extent of awareness and knowledge among acceptors of the immunisation programme and not to make any coverage assessment or evaluation of the programme itself, the universe consisted of those mothers who had received some immunisation service from the programme. To be more specific, in the study universe, the term mother implied a woman who has at least one living child. The sample, however, consisted of those women who visited the maternity hospital situated in the compound of the Population Center, Indira Nagar, Lucknow during the period October-November, 1987. It was therefore not random.

The sample size was 153, the unit of observation being a woman with at least one living child. Each respondent was interviewed to complete a questionnaire framed for the purpose. The questionnaire was elaborate and provided scope to make counter-checks for testing the consistency of the answers. The subsequent testing of the answers provided by the respondents proved the high quality of the data.

### **Results**

The practice of immunisation, like the practice of any other measure

is a function, among others, of the awareness and knowledge about it. Awareness was measured with respect to the four vaccines\* used in the immunisation programme. The respondents, though users of the vaccines, were not equally aware of all vaccines. The extent of awareness was related to the age, education and occupational category of the respondents.

### *Age and Awareness*

The relationship between the respondents' age and awareness of immunisation is presented in Table 1. When the percentage of respondents aware of any disease was plotted against age, an inverted curve was obtained, with low percentages in the extreme age groups and high percentages in the middle age groups. Except for DPT, the age group 20-24 showed the highest degree of awareness. Beyond age group 30-34, the proportion of respondents who were aware of any disease fell rather rapidly. In addition to the variation of awareness with respect to age, there was also an inter-disease differential in awareness. Awareness was highest in the case of the polio vaccine in all age groups and the least in the case of the DPT vaccine. In sum, over all ages, awareness of immunisation was 90.2 per cent for polio, 72.5 per cent for BCG, 54.3 per cent for measles, and only 43.2 per cent for DPT.

TABLE 1  
Per cent distribution of respondents by awareness and age

Age group (years)	No. of respondents	BCG	Polio	DPT	Measles	Standard deviation
15-19	6	16.7	83.3	16.7	0.0	32.0
20-24	65	80.0	95.4	41.5	56.9	20.7
25-29	56	69.6	87.5	50.0	55.4	14.5
30-34	21	76.2	90.5	42.9	91.9	17.6
35-40	5	40.0	80.0	40.0	40.0	17.3
Total	153	72.5	90.2	43.8	54.3	
Standard deviation		24.4	5.4	11.3	22.6	

The standard deviation at the right of the table measures inter-vaccine variability of awareness, awareness being expressed as a percentage. The standard deviation at the bottom of the table measures the age variability of awareness.

\*The four vaccines are BCG, polio, DPT and Measles used against tuberculosis; poliomyelitis; diphtheria, pertussis and tetanus (DPT) and measles. The vaccines for diphtheria, pertussis and tetanus are mixed, and commonly called the DPT vaccine.

The age group 15-19 showed the highest variation, the standard deviation being 32.0. The 25-29 age group showed the least variation in awareness about vaccines. Likewise when the age incidence of variation of awareness was considered, BCG showed the highest age variation, the standard deviation being 24.4. The least variation of awareness with respect to age occurred in case of polio, the standard deviation being 5.4.

### *Religion, Occupation and Awareness*

Of the two religious communities represented in our sample, the Hindus showed greater awareness about all the four vaccines than the Muslims. Community-wise awareness showed a good symmetry, the majority from each community being aware of polio and the least of DPT. Awareness variation over diseases was, however, higher for Muslims than for Hindus.

The occupational variation of awareness (standard deviation) was 10.8 for BCG, 14.2 for DPT, and 13.9 for measles. The least variation occurred in the case of polio immunisation (standard deviation: 3.1). Inter-disease variation of awareness appeared to be quite high (the standard deviation ranged from 14.2 to 25.1).

### *Education and Awareness*

Education appeared to be the most definite and important variable associated with awareness. The percentage of respondents aware of any vaccine varied consistently with the number of years of schooling that they had received. The estimated relationship between the percentage aware of a vaccine and years of schooling is shown below:

$$Y_1 = 53.02 + 3.31x$$

$$R^2 = 0.79$$

$$Y_2 = 84.45 + 1.22x$$

$$R^2 = 0.78$$

$$Y_3 = 22.13 + 3.62x$$

$$R^2 = 0.84$$

$$Y_4 = 30.01 + 4.17x$$

$$R^2 = 0.76$$

where  $Y_i$  = percentage of respondents aware of the disease,  $i$  ( $i=1$  for BCG,  $i=2$  for polio,  $i=3$  for DPT,  $i=4$  for measles), and  $x$  = number of years of schooling.

As reflected in the values of the coefficients of  $x$ , education made the most difference in the case of awareness of measles and the least in the case

of polio. In the former case, one year's incremental schooling raised the percentage aware by 4.2 while in case of polio, one year's incremental schooling raised the percentage aware by 1.2. Next to measles, education influenced awareness of DPT. With no education, 22.1 per cent were estimated to be aware (observed value: 19.6); one year's schooling raised the awareness level by 3.6 per cent. The estimated equations were statistically significant, but caution is to be exercised in drawing any conclusions, as only six observations were used for the estimation.

### *Knowledge of Immunisation*

The knowledge level of the respondents was analysed by a dichotomous classification made previously on the basis of awareness and further dividing the group showing awareness into three sub-groups. A scale of knowledge with three grades was used for making the sub-groups: those who had full knowledge about dose and age pattern of use of all the four vaccines were placed in the first grade, those with partial knowledge were placed in the second grade, and those without any knowledge in the third grade. Subsequently, a bivariate distribution was derived with the respondents' age, religion, occupation and education on one hand and grades of knowledge on the other.

### *Age and Knowledge*

The respondents' knowledge of some vaccines significantly varied with age. As shown in Table 2, respondents below 25 and above 30 had less knowledge about DPT than the middle age group, though the extreme age groups were more knowledgeable than the middle age group with regard to the measles vaccine. In general, the middle age group appeared to be more knowledgeable than the extreme age groups when those with at least some knowledge were considered.

Knowledge regarding the polio vaccine was, in general, high. At least 45 per cent of the respondents in all the age groups had full knowledge about immunisation against polio; about 30 per cent had partial knowledge. In case of DPT, fewer respondents had full knowledge than partial knowledge. In general, knowledge regarding the polio vaccine was highest, followed by that of the measles, BCG and DPT vaccines in that order.

### *Religion, Occupation and Knowledge*

A significant religious differential was observed in relation to the respondents' knowledge of vaccines. In general, the Hindu respondents had better knowledge than Muslim respondents, though in some cases the dif-

TABLE 2

Per cent distribution of respondents by knowledge of vaccines and age

Knowledge level	Age of respondents (years)		
	Below 25	25-29	30+
<i>BCG vaccine</i>			
Grade 1	15.1	18.0	15.8
Grade 2	67.9	69.2	63.2
Grade 3	17.0	12.8	21.0
Total	53	39	19
<i>Polio vaccine</i>			
Grade 1	49.3	46.9	45.5
Grade 2	28.3	36.7	36.3
Grade 3	22.4	16.3	18.2
Total	67	49	22
<i>DPT vaccine</i>			
Grade 1	17.9	21.4	9.1
Grade 2	57.1	67.9	72.7
Grade 3	25.0	10.7	18.2
Total	28	28	11
<i>Measles vaccine</i>			
Grade 1	43.2	38.7	40.0
Grade 2	40.5	51.6	46.7
Grade 3	16.2	9.7	13.3
Total	37	31	15

Total indicates the percentage of respondents who were aware of the vaccine.

Grade 1 = Full knowledge; Grade 2 = Partial knowledge, and Grade 3 = Only awareness but no knowledge.

ferential was only marginal. Thus, in case of BCG, 16.5 per cent of Hindu respondents had full knowledge while a marginally lower percentage (15.4) of Muslims were fully informed. Similarly, the proportion of Muslim respondents who had full knowledge about the polio and DPT vaccines was marginally lower than the Hindus. Only in case of measles, a significantly higher proportion of Hindu respondents (44.4) were fully informed as against only 18.2 per cent of Muslim respondents.

The occupational differential in knowledge about vaccines was not as clear as the religious differential; those whose husbands were in service and business scored more or less similar grades. These grades stood at a much higher level than those whose husbands were cultivators and labourers. No respondent from the cultivator or wage labour group had full knowledge about BCG, and only a few possessed full information about the polio vaccine.

### *Education and Knowledge*

The relationship between knowledge of any vaccine and education stood out as being most prominent and consistent. Knowledge when related to education showed a more or less smooth positive relationship. The estimated equations between the proportion (percentage) having at least some knowledge about any vaccine and years of schooling are given below:

$$Y_1 = 65.48 + 2.10x \dots\dots\dots (1)$$

$$R^2 = 0.80$$

$$Y_2 = 70.28 + 1.76x \dots\dots\dots (2)$$

$$R^2 = 0.50$$

$$Y_3 = 66.00 + 1.58x \dots\dots\dots (3)$$

$$R^2 = 0.88$$

$$Y_4 = 78.05 + 1.04x \dots\dots\dots (4)$$

$$R^2 = 0.19$$

where  $Y_i$  = the percentage of respondents having at least some knowledge about  $i$  ( $i = 1$  for BCG,  $i = 2$  for polio,  $i = 3$  for DPT and  $i = 4$  for measles), and

$x$  = the years of schooling ( the number of observations is 6).

Equations (1) and (3) are statistically significant but equations (2) and (4) are not. Nevertheless, irrespective of significance, the positive coefficients of  $x$  are clearly indicative of the importance of education in the acquisition of knowledge about the vaccines studied.

### *Extent of completeness of immunisation*

The age of the sampled children varied from one month to 12 months. The use of vaccines is, however, dependent on age of the child. As prescribed by medical authorities, the BCG vaccine is to be given in the first year of life, age 1 1/2 to 9 months is prescribed for administering the polio and DPT vaccines, while 9 to 15 months are prescribed for giving the measles vaccine. For immunisation against BCG and measles, one dose of each vaccine is suggested, while three doses at intervals of one month are prescribed for

### DPT and polio immunisation.

The extent of use of the vaccine by the respondents appeared to differ significantly across the diseases. BCG use seemed to be almost complete. Out of 153 children, 147 representing 96 per cent, had received the BCG vaccine. The measles vaccine was also received by a significant proportion of children. Low use, however, was recorded in case of DPT and polio vaccines. In order to measure the extent of timely use of these two vaccines, some simplistic assumptions were made. It was assumed that the users are uniformly distributed over the second to ninth months. Since three doses are given in three consecutive months, if the first dose were given in the second month, the second dose would have to be given in the third month, and so on. The required age for the intake of the first dose therefore could run from the second month to the seventh month; for the second dose, it would spread over the third month to the eighth month; and for the third dose, from the fourth to the ninth month.

Given a uniform distribution of the users over the prescribed months, the probability that a user would give her child the first dose in the  $j$ th month of the child's age ( $j=2,3,\dots,7$ ) would be  $1/6$ . Taking the first dose in the  $j$ th month of age makes it a compulsion to take the second dose in the  $(j+1)$ th month and the third dose in the  $(j+2)$ th month. This assumes that the time schedule is maintained. With this simple measure of probability, the following cumulative probability for each month was obtained.

Age (in months)	Cumulative probability of taking the		
	1st dose	2nd dose	3rd dose
2	1/6	0	0
3	2/6	1/6	0
4	3/6	2/6	1/6
5	4/6	3/6	2/6
6	5/6	4/6	3/6
7	1	5/6	4/6
8	—	1	5/6
9	—	—	1

On the basis of the above cumulative probability, the expected number of users of any dose was calculated. The expected number was set against the actual number in Table 3, which shows the extent of completeness of the use of the polio and DPT vaccines. The picture is not promising. The shortfall in use appears to be the rule, and completion, the exception.

TABLE 3

Estimation of the extent of complete immunisation with polio and DPT vaccines

Vaccine	Age of child in months							
	2	3	4	5	6	7	8	9
No of children	22	36	17	18	7	8	4	11
<i>Polio (users)</i>								
1st Dose								
Expected	4	12	9	12	6	8	—	—
Actual	0	4	8	13	5	7	—	—
Deviation	-4	-8	-1	+1	-1	-1	—	—
2nd Dose								
Expected	—	6	6	9	5	7	4	—
Actual	—	1	1	7	4	4	1	—
Deviation	—	-5	-5	-2	-1	-3	-3	—
3rd Dose								
Expected	—	—	3	6	4	5	3	11
Actual	—	—	1	2	2	0	0	7
Deviation	—	—	-2	-4	-2	-5	-3	-4
<i>DPT (users)</i>								
1st Dose								
Expected	4	12	9	12	6	8	—	—
Actual	0	10	8	14	7	7	—	—
Deviation	-4	-2	-1	+2	+1	-1	—	—
2nd Dose								
Expected	—	6	6	9	5	7	4	—
Actual	—	1	2	9	5	6	2	—
Deviation	—	-5	-4	0	0	-1	-2	—
3rd Dose								
Expected	—	—	3	6	4	5	3	11
Actual	—	—	0	4	3	3	0	8
Deviation	—	—	-3	-2	-1	-2	-3	-3

The dash implies not applicable. The deviation is the difference between actual and expected users.

Table 4 gives the overall completion rate for the use of different vaccines.



TABLE 4

Overall use completeness rate of vaccines (%)

BCG	Polio			DPT			Measles
One dose	1st dose	2nd dose	3rd dose	1st dose	2nd dose	3rd dose	One dose
96	78	62	49	89	71	62	75

For BCG and measles, the total number of users was divided by the appropriate number who are supposed to take these vaccines at the corresponding ages. Thus, for BCG, the denominator was 153 while for measles, those belonging to ages 9 to 12 months were used as the denominator.

As seen in Table 4, 22 per cent failed to take the first dose of polio, 38 per cent the second dose and 51 per cent the third dose. This shows the extent of the expected drop-out rate. From the first to the second dose the drop-out rate was 21 per cent, from the first to third dose, it was 37 per cent, and from the second to the third dose it was again 21 per cent. For DPT the drop-out rates from the first to second and third doses were respectively 20 per cent and 30 per cent, and from the second to third dose 13 per cent. Thus, for DPT the drop-out rate was lower than for polio. The unsatisfactory use pattern of vaccines is more or less a reflection of the respondents' incomplete awareness and knowledge about the vaccines.

### *Immunisation and practice of family planning*

That the immunisation programme will effect an immediate reduction in infant and child mortality and ensure better health for children and mothers is taken more or less for granted. Widespread immunisation is expected to lead to a speedy reduction of child mortality and to hasten the downward transition in fertility. However, the impact of the family planning programme was reduced by a slack demand from the people whose spontaneity in the acceptance of family planning was dulled by the perception of high child mortality. What is, therefore, of immediate necessity is an expansion of the demand for family planning services and in this, the immunisation programme can play a positive role; it can act as a feeder of family planning information and directly motivate the mother to accept family planning not only for the sake of her child's health but also for her own health. In the following paragraphs some deliberation on the possible impact of immunisation on the acceptance of family planning is presented.

Of the 153 respondents, the majority (137 or 89.5 per cent) had received tetanus toxoid (T.T) during their pregnancy as a part of antenatal care. While

42 respondents (27.5 per cent) had accepted family planning from among the receivers of antenatal T.T., none of the 16 respondents who had not had antenatal T.T. had opted for family planning. The proportion of family planning acceptors in the sample is low, but what is encouraging is that all acceptors of family planning had been receivers of antenatal care.\*

Since the association between antenatal care and acceptance of family planning is not clear enough to draw an unambiguous conclusion, we tried to bring into focus the direct relationship between family planning and motivational advice provided by the immunisation-giving health staff.

Only 50 respondents representing 32.7 per cent of the total had been advised by the immunisation providers to accept some method of family planning and out of these, 29 (58 per cent) had adopted a method. Some of those who had not received any advice from the immunisation providers, had also opted for family planning, their proportion being 12.6 per cent. The association between family planning advice given by the health staff and acceptance of a method was examined by applying the chi square test. It appeared to be highly significant, thus establishing a positive relationship between family planning acceptance and advice provided at the time of immunisation. However, when the possibility of future acceptance by the hitherto non-acceptors was related to counselling, the chi-square value was statistically insignificant thus ruling out the dependence of future acceptance upon past advice received. This renders the entire picture somewhat hazy. What emerges is that family planning advice per se carries no motivational value unless it is conveyed in a convincing manner.

## Discussion and Conclusion

The present analysis has shed some light on the extent of awareness and knowledge among immunisation acceptors about the different vaccines used in the child immunisation programme, and the extent of actual utilisation of these vaccines by them. Use and practice being mainly an image of awareness and knowledge, the shortfalls in the respondents' awareness and knowledge were reflected in an incomplete use of immunisation facilities. This deficiency in knowledge was not present to the same extent among all the respondents. There were substantial religious, age, occupational and educational differentials in knowledge, the most important differential in awareness and knowledge being that of education. Educational levels showed a systematic relationship with awareness and knowledge.

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\*This fact implies a possible association between T.T. immunisation of the mother and family planning acceptance. With the present sample size, it would be hasty to draw any conclusion. Nevertheless, the calculated chi square value was statistically significant, thus indicating a positive association.

Examination of the relationship between family planning advice given by immunisation providers and family planning acceptance indicated that a small segment (27.5 per cent ) of the respondents had so far adopted family planning, though the majority had received advice from immunisation providers. While the association between advice and acceptance of family planning appeared to be statistically significant, when acceptance at a future date, of the hitherto non-acceptors was related to the advice received, the relationship became hazy, being statistically insignificant. In general, the non-acceptors suffered from lack of information about the different methods of contraception.

The advancement of the family planning programme side by side with the immunisation programme, therefore, warrants a lifting off of the screen of generalised ignorance from these potential acceptors of family planning. The basic issue is, however, more intractable than it appears to be, for the reduction of child mortality may not instantaneously affect the reproductive behaviour of the people. A lag may exist between the reduction of infant and child mortality and family planning acceptance, and hence the reduction of fertility. It would all depend upon the type of relationship couples hold between child mortality and reproduction: if they want a fixed number of children and follow a replacement attitude as a reaction to child loss, a reduction in child mortality would lead to a reduction in fertility as well, but if they follow what is called the hoarding or insurance mode of reproduction, a reduction in child mortality may not produce an instantaneous substantial impact on fertility. Whether a couple will follow the replacement or the insurance mode depends on their stage of socio-economic development. With increasing development, the replacement response becomes increasingly dominant over the insurance motivated response to child deaths thereby reducing 'excess births'<sup>1</sup>. Uttar Pradesh is one of the least developed states of India, its mortality and fertility have not yet undergone much decline. Hence, the replacement motive is not yet dominant over the insurance mode of reproduction. When the applicability of the replacement model was tested in this sample by applying the Trussell-Olsen<sup>4</sup> method, it was found that the replacement model did not hold true for the sample. This casts doubt on the possibility of a speedy reduction in fertility. However, a greater thrust through a vigorous communication programme for immunisation would pave the way in this direction, since with accurate knowledge of immunisation more people will benefit from it.

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# **EFFECTS OF MARITAL DURATION ON THE FERTILITY OF MIGRANTS AND NON-MIGRANTS IN INDIA**

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## **Introduction**

It has generally been observed that urban living patterns tend to stimulate lower fertility. The major factors associated with the mechanisms and patterns of lower fertility levels in urban centres as identified by demographers include educational advancement, delayed marriage, better health practices, problems of accommodation, higher costs of rearing children and greater access to family planning services. People who move to city areas from traditional societies are exposed to urban socio-economic systems and such exposure tends to attract them towards the small family norm.

City-ward migration may also influence fertility in a negative way by separating migrant husbands from their wives for shorter or longer periods. However, these factors which can influence fertility reduction do not operate universally and their role in affecting childbearing habits may differ according to varying situations. Thus, in the same city, two groups of migrant and non-migrant couples who have spent an equal period of effective marriage may not have the same average number of children. In these two groups if couples with in-migrant husbands have a lower level of fertility than their non-migrant counterparts, it may support the hypothesis that married life becomes less responsive to reproduction when the male spouse is spatially mobile.

An attempt has been made in this paper to find out the fertility differentials between migrant and non-migrant couples living in city areas and to understand the extent to which the length of married life and migratory features of the male partner are associated with their reproductive performance.

## **Data**

The analysis is based on the primary data collected for a study entitled 'Socio-economic dimensions of rural-urban migration in Uttar Pradesh'. The survey was conducted during 1983-84 in two selected cities of the state of Uttar Pradesh—Lucknow, the capital city of the State with a population of 1,006,538 (1981), and Kanpur, the biggest industrial centre in the State

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having a population of 1,688,242 (1981). In these two cities, 847\* migrant and 324 non-migrant\*\* males (household heads and male partners of the couples in the selected households) were interviewed. The interviews were conducted by using separate questionnaires for migrant and non-migrant respondents.

## Results and Discussion

### *Rural-urban background of the migrants and degree of mobility*

Table 1 presents a distribution of the migrant respondents on the basis of their place of origin and the number of migratory movements they had made prior to their arrival in the two cities selected for the survey.

TABLE 1

**Distribution of migrant respondents according to the number of movements and rural-urban origin**

Number of movements	Place of birth			Total
	Rural area (India)	Urban area (India)	Other countries	
1	550 (83.1)	70 (49.6)	34 (77.3)	654 (77.2)
2	34 (5.1)	17 (12.1)	3 (6.8)	54 (6.4)
3	30 (4.5)	13 (9.2)	2 (4.5)	45 (5.3)
4 +	48 (7.3)	41 (29.1)	5 (11.4)	94 (11.1)
Total	662(78.2) (100.0)	141(16.6) (100.0)	44(5.2) (100.0)	847(100.0) (100.0)

Most of the interviewed migrants reported that they were of rural origin. About 78 per cent were born in rural areas and nearly 17 per cent in urban areas. Their migration history showed that nearly 77 per cent had moved only once before they had come to live in Lucknow or Kanpur, thereby indicating a very low degree of mobility. Migrants who had been born in urban areas were found to be more mobile than those born in rural areas. The proportion of those who had not migrated directly from their native place

\* A person whose native place was outside the selected city.

\*\* A person whose native place was the selected city.

to Lucknow or Kanpur but had moved more than once before settling in these cities, was 50.4 per cent in the case of urban-born migrants as against 16.9 per cent in the case of rural-born migrants.

### *Mobility and age at marriage*

If people migrate from one place to another at an early age, it may significantly affect their age at marriage. Table 2 shows that about 39 per cent of the respondents had migrated to the city from their previous place of residence before they were 18 years of age. Of these, nearly 83 per cent reported that they had been effectively married after their in-migration to the city. Of the migrant respondents who had moved to the city between the ages of 18 to 21 years, 45 per cent stated that they were effectively married after crossing the age of 21 years and after their migration to the city. Again, a large percentage of those who had migrated to the city after 21, were found to have been effectively married around the period of their migration or during their post-migration phase (Table 2). These findings appear to indicate that migratory decisions largely led to delayed marriage among males.

TABLE 2

Age at effective marriage of respondents (males) according to age at in-migration\* to the selected cities

Age at in-migration* to selected cities (years)	Age at effective marriage(years)					Total
	18	18-21	22-25	26+	Unmarr- ied	
Less than 18	44 (13.2)	131 (39.5)	91 (27.4)	52 (15.7)	14 (4.2)	332 (39.2) (100.0)
18-21	13 (8.1)	64 (40.0)	44 (27.5)	28 (17.5)	11 (6.9)	160 (18.9) (100.0)
22-25	11 (7.9)	52 (37.4)	47 (33.8)	24 (17.3)	5 (3.6)	139 (16.4) (100.0)
26 and above	15 (6.9)	66 (30.6)	81 (37.5)	52 (24.1)	2 (0.9)	216 (25.5) (100.0)
*Total migrants	83 (9.8)	313 (36.9)	263 (31.1)	156 (18.4)	32 (3.8)	847 (100.0) (100.0)

Last migration from previous place of residence to the selected cities.

The survey data further revealed that the age at effective marriage between migrants and non-migrants did not differ significantly; the mean age

at effective marriage was 21.91 years for migrants and 22.06 for non-migrants (Table 3).

TABLE 3

## Age at effective marriage of migrant and non-migrant respondents

Age at effective marriage (years)	Migrants	Non-migrants
Less than 18	83 (9.8)	32 (9.9)
18-21	313 (36.9)	115 (35.5)
22-25	263 (31.1)	108 (33.4)
26 and above	156 (18.4)	64 (19.7)
Unmarried	32 (3.8)	5 (1.5)
Total	847 (100.0)	324 (100.0)
Mean*	21.91	22.06

The mean value has been worked out after excluding bachelors from the total

The proportion of those who were married at the age of less than 18 years was 9.8 per cent and 9.9 per cent among the migrant and non-migrant respondents respectively. Of the migrant males, 31.1 per cent were effectively married between the age of 22 to 25 years as compared to 33.4 per cent of the non-migrant males (Table 3). The analysis shows that the surveyed migrants who mostly belonged to rural areas generally adopted the marital age pattern prevailing in the cities of their destination.

### *Marital life and reproduction*

The migrant respondents who were mostly of rural origin may be expected to have experienced a larger number of births than their non-migrant counterparts living in the cities surveyed since birth. However, the survey showed that couples wherein the wife was aged 45 years and more and the husband was a migrant, had a mean of 4.8 live births as compared to a mean of 5.7 live births among a corresponding group of couples wherein the husband was a non-migrant and had lived in the city since birth. It was further observed that among these older couples with migrant husbands, the mean number of live births was 5.0 for those whose wives were effectively married at the age of less than 18 years as compared to 4.5 for couples with wives effectively married at age 18 or above. Among couples with non-migrant husbands the corresponding figures were 5.9 and 5.4. These findings indicate



that among respondents whose wives had completed their reproductive span, fertility was lower among couples with migrant husbands than among those with non-migrant husbands, and that the age at effective marriage played a significant part in restricting the number of child births in both these groups.

When duration of married life for migrant and non-migrant respondents was associated with their fertility levels, it was noticed that during the initial phase of married life i.e. in the first decade after effective marriage, the migrants had a higher level of fertility than their non-migrant counterparts. This relationship between marital duration and the number of live births has been shown in Table 4 for migrant respondents and in Table 5 for non-migrant respondents.

TABLE 4

Number of live births by duration of marriage of migrant respondents

Duration of marriage (years)	Number of live births				Total	Mean
	0	1	2-3	4+		
Less than 2	10 (66.7)	5 (33.3)	—	—	15 (100.0)	0.33
2 to 6	15 (22.7)	35 (53.0)	16 (24.3)	— (100.0)	66	1.00
6 to 11	2 (2.0)	15 (15.3)	71 (72.5)	10 (10.2)	98 (100.0)	2.41
11 to 16	—	4 (4.1)	51 (51.5)	44 (44.4)	99 (100.0)	3.50
16 to 21	1 (0.8)	3 (2.5)	33 (27.0)	85 (69.7)	122 (100.0)	4.40
21 to 26	2 (2.3)	3 (3.4)	18 (20.2)	66 (74.1)	89 (100.0)	4.70
26 to 31	3 (3.7)	2 (2.5)	17 (21.0)	59 (72.8)	81 (100.0)	5.08
31 to 36	—	2 (3.1)	13 (20.0)	50 (76.9)	65 (100.0)	5.36
36 to 41	1 (1.7)	1 (1.7)	15 (25.4)	42 (71.2)	59 (100.0)	4.76
41 +	—	2 (3.1)	11 (16.9)	52 (80.0)	65 (100.0)	5.80
Unmarried/ resp. with duration unknown	42 (42.7)	7 (8.0)	1 (12.5)	28 (31.8)	88 (100.0)	—
<b>Total</b>	<b>76</b>	<b>79</b>	<b>256</b>	<b>436</b>	<b>847</b>	<b>3.77</b>

TABLE 5

Number of live births by duration of marriage of  
non-migrant respondents

Duration of marriage (years)	Number of live births				Total	Mean
	0	1	2-3	4+		
2	12 (85.7)	2 (14.3)	—	—	14 (100.0)	0.14
2 to 6	14 (23.3)	34 (56.7)	12 (20.0)	—	60 (100.0)	0.95
6 to 11	4 (7.7)	6 (11.5)	35 (67.3)	7 (13.5)	52 (100.0)	2.31
11 to 16	—	4 (7.7)	22 (42.3)	26 (50.0)	52 (100.0)	3.77
16 to 21	—	—	9 (23.1)	30 (76.9)	39 (100.0)	4.68
21 to 26	—	—	5 (23.8)	21 (76.2)	26 (100.0)	5.58
26 to 31	1 (5.0)	—	3 (15.0)	16 (80.0)	20 (100.0)	5.58
31 to 36	—	—	4 (21.1)	15 (78.9)	19 (100.0)	5.72
36 to 41	1 (7.7)	—	1 (7.7)	11 (84.6)	13 (100.0)	6.39
41 +	1 (9.1)	—	2 (11.2)	8 (72.7)	11 (100.0)	6.36
Unmarried/ resp. with duration unknown	10 (55.5)	3 (16.7)	2 (11.1)	3 (16.7)	18 (100.0)	—
Total	43	49	95	137	324	3.50

The tables demonstrate that migrant respondents who had had less than 11 years of married life, had a mean of 0.33 to 2.41 live births (Table 4) as against 0.14 to 2.31 among their non-migrant counterparts (Table 5). Also, among those who had been married for less than two years, 66.7 per cent of migrant respondents stated to have experienced no live birth (Table 4) as compared to 85.7 per cent of non-migrant respondents (Table 5). This suggests that a large proportion of males belonging to city areas since their birth (non-migrants) avoid child births in the early post-marital period than

those who in-migrate to the cities from outside (migrants).

On the other hand, Tables 4 and 5 reveal that after passing more than a decade of married life, migrants develop a greater tendency to restrict child births than non-migrants. Among respondents with a married life of 11 years or more, those with four or more live births were fewer among migrants than non-migrants; about 44.4 per cent of migrant respondents with 11 to 16 years of married life had experienced four or more live births as against 50.0 per cent of non-migrants. Again, among respondents who had spent over ten years of married life, the migrants had a mean of 3.50 to 5.80 live births as against 3.77 to 6.36 among non-migrants. Of the surveyed males with the longest duration of married life i.e. more than 40 years, the mean number of live births was 5.80 for migrants as compared to 6.36 for non-migrants. These findings indicate that married migrant males tend to restrict their family size after a longer period of stay in city areas and during their early post-marital city life they do not seem to be as conscious about averting child births as their non-migrant counterparts.

### Conclusion

The above analysis indicates that the first decade of married life is more responsive to reproduction among migrants than non-migrants. A larger proportion of migrant as compared to non-migrant respondents seem to restrict child birth with the beginning of the second decade of their marital life. It appears that young migrants to the city areas start their married life with traditional values and attitudes which are already developed (at their native place), and which gradually change with a longer stay in the urban socio-economic set-up. These findings suggest that the rapid growth of the urban population would largely be controlled if urban couples, particularly non-migrant and young migrant males, are effectively educated and motivated to accept the small family norm.

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# **A QUALITATIVE ASSESSMENT OF THE FUNCTIONING OF A PHC IN A TRIBAL SETTING - A CASE STUDY**

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and  
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## **Introduction**

Since the meeting of the Bhor Committee<sup>1</sup> in 1946, several committees have met to review the health situation and recommend measures to maximise the utilisation of health services. More recently, the Alma-Ata declaration on Primary Health Care and the National Health Policy of the Government of India (1983) have given a new direction to health planning, making primary health care the central function and main focus of the national health system. The goal of national health planning in India now is to attain health for all by the year 2000 with specific goals to be achieved by 1985, 1990, 1995 and 2000 A.D.<sup>2,3</sup> The policy stresses the preventive, promotive, public health and rehabilitation aspects of health care, and the need for establishing comprehensive primary health care services to reach the people in the remotest areas of the country.

The functions of the Primary Health Centre in India include the provision of medical care, mother and child health care including family planning, and safe water and basic sanitation; the prevention and control of locally endemic diseases; collection and reporting of vital statistics; education about relevant health and national health programmes; referral services, and training of health guides, multipurpose health workers and local dais. Despite the apparently perfect planning, the desired decline in the morbidity and mortality levels has not occurred, suggesting that either the implementation of the health policy through the large network of Primary Health Centres catering to the rural masses is not optimum, or that the utilisation of health services by the rural people is, by and large, poor.

Considering that under-utilisation of PHCs is not restricted to a certain group of states or districts, one submits that besides general factors, localised constraints also prevent the optimal utilisation of PHC facilities and services. The contention here is that it depends on the individual health centre to reach out to its clientele. Recent studies on this issue have focussed attention on providers, their functioning and their interaction with clients. They

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have made a good beginning and succeeded in procuring some crucial information on the functioning of PHCs. However, all these studies were carried out at the macro level. Of late, there has been a growing realisation of the need for carrying out in-depth case studies of PHCs to understand their overall functioning and to find explanations for the localised factors responsible for their functioning. A micro level study by Khan and Tamang<sup>1</sup> conducted in three states of India namely, Bihar, Himachal Pradesh and Gujarat is one of the few studies available on this important issue.

The present in-depth study is also an attempt in this direction. Its aim is to understand qualitatively the functioning of a PHC in a tribal area of Madhya Pradesh. The data were collected by the authors by using anthropological techniques of observation and interviews.

### **The PHC**

The Primary Health Centre under study was situated on the Jabalpur-Mandla road, about 40 kms. from the district Headquarters. Its jurisdiction extends over a sizeable area of 42,986 sq. kms., covering 131 villages with a total population of 50,604 (1981 census). About seventy per cent of the population is tribal; and belongs to the Gond tribe, which mainly inhabits this block.

As on December 11, 1986, the PHC was headed by a Medical Officer-in-Charge (MO-I) assisted by three male Medical Officers (MO-1, MO-2, MO-3), there was no female doctor. The supervisory staff comprised of a Block Extension Educator (BEE) and a Malaria Inspector. The other supportive staff which helped in the day-to-day functioning of the PHC were a compounder, a laboratory technician, a dresser, a computer, a clerk, a ward boy and a peon. Among the vacant posts were that of a Staff Nurse, an Auxiliary Nurse Midwife, and two each of male and female supervisors (from a total of five supervisors). Further, 10 male and 16 female Multi-purpose Workers (MPWs) out of 16 each, were in position. A total of 57 Village Health Guides (VHG) and 85 village dais had also been trained to provide health services at the door-step level.

### **Results**

The findings are presented in three parts. The first deals with the actual process of health care delivery at the PHC, the second with the infrastructural support available for its functioning, and the third presents the shortcomings in the functioning of the PHC.

### Health Care Delivery System

#### *Availability of the doctor:*

The morning OPD hours of the PHC were from 8 a.m. to 12 noon and the evening, from 5 p.m to 6 p.m. During a seven-day observation period, it was noted that a doctor was available at 8.50 a.m. at the earliest and 9.15 a.m. at the latest. On average, in the mornings, a doctor spent 1.46 hours at the OPD as against the total requirement of four hours, while in the evenings, he spent 0.26 hours as against the prescribed one hour. The total average availability per day of a doctor was two hours, which was three hours less than the prescribed five hours per day. It will not be out of place to mention that only one of the four PHC doctors was usually present; the others being on leave or absconding from their duties.

#### *Patient visits*

An average of 85 patients (60 new; 25 old) visited the OPD per day. The average number of patient visits from hospital records, as calculated by the total number of patients registered in the OPD register during any week in each month for the last one year (April 1986 to March 1987), gave a daily average of 52 patient visits: on average, 57 patients during the rainy season (June-August), 53 in the post-rainy season (September to November), and 49 during the winter (December to February) and summer (March to May) months.

#### *Age-sex characteristics of patients*

The age-sex characteristics of the OPD patients who visited the PHC during the last one year and of these who visited it during the seven-day observation period are presented in Table 1.

The table indicates that the child population (0-4 years) seeking medical help was the highest (33.2 per cent) as compared to other age groups. However, during the 7-day observation period, this age group constituted only 20.1 per cent of the total patients. Around 11.5 per cent of the OPD patients were infants (0-1 years). Surprisingly, there was no difference by sex among the OPD patients in the reproductive age group of 25-44 years (38.7 per cent) inspite of the fact that no female doctor had been posted at the PHC since the past one year. The ratio of male patients to female patients was more or less the same in both the one-year and the 7-day data.

#### *Catchment area of PHC*

Table 2 shows that patients from only 37 villages (28.2 per cent) out of the 131 villages covered, visited the PHC. The majority (93 per cent) travell-

TABLE 1

## Age-sex characteristics of patients visiting PHC

Age group (in years)	OPD Record			7-day observation		
	Male	Female	Total	Male	Female	Total
<b>Children</b>						
0-1	—	—	—	11.4	11.6	11.5
2-4	—	—	—	8.0	9.1	8.6
0-4	34.2	31.9	33.2	19.4	20.7	20.1
5-14	16.4	11.6	14.3	24.6	18.9	21.8
0-14	50.6	43.5	47.5	44.0	29.6	41.9
<b>Adult</b>						
15-24	11.4	9.3	10.4	23.4	19.5	21.5
25-44	27.0	38.7	32.3	18.9	18.9	18.9
45-59	7.5	4.5	6.1	8.5	17.6	12.9
60+	3.5	4.0	3.7	5.2	4.4	4.8
15+	49.5	56.5	52.5	56.0	60.4	58.1
<b>Male/Female</b>						
patient ratio		1.2			1.1	
<b>Total(N)</b>	<b>2413</b>	<b>1949</b>	<b>4362</b>	<b>306</b>	<b>287</b>	<b>593</b>

The break-up of figures in age groups 0-1 and 2-4 years in the OPD records was not available

ed a distance of less than six kms to reach the PHC. More than half of them (53 per cent) came from the PHC village itself, and most (69 per cent), had to travel less than 15 minutes to reach it. Almost all the patients (92 per cent) came by foot.

### *Infra-structural support at PHC*

#### **1. Vehicle**

The jeep allotted for the PHC had not been in working order for the past one year and was awaiting condemnation by the office of the Chief Medical Officer (CMO). However, the CMO had provided a jeep and funds for its fuel and maintenance for family planning work. The jeep was mostly used by MO-I to visit the PHC area to instruct his field staff to recruit family planning clients. It was also used for transporting family planning clients to and from camps to their villages. We observed that the vehicle was never used for supervision of other health programmes.

TABLE 2

## Catchment area of PHC

Parameter	PHC
Total villages covered by the PHC	131
No of villages from where patients come	37
Proportion of patients coming from.	
PHC villages	53
upto 2 kms	82
upto 4 kms.	90
upto 6 kms	93
More than 6 kms.	7
Proportion of patients requiring time to reach PHC	
less than 15 minutes	69
less than 30 minutes	86
less than 1 hour	89
more than 1 hour	11
Proportion of patients who come	
on foot	92
by cycle	6
by bus and other vehicles	2

## 2. Cold Chain

The refrigerator available at the PHC was in working condition. The MO-I told us that there was a regular supply of all the required vaccines, which were distributed to the field staff during their monthly meetings. They carried the vaccines in thermocole boxes filled with ice cubes, to their field stations.

## 3. Supply of medicines

A discussion with MO-I indicated that the supply of medicines to his PHC was regular. He explained the procedure:

“Last year, the budget of medicines for our PHC was Rs. 40,000. The money was not provided to the PHC for the purchases, but medicines worth this amount were supplied by the CMO's office in the form of a kit. We were never consulted about the type of medicines required at our PHC and therefore many a times, the kit contained medicines which were of no use to us. For example, last year, the kit contained medicines for heart ailments of which there being few patients, these medicines are still lying with us”.

We were told that the medicines supplied in the form of a kit to the PHCs in Madhya Pradesh were of sub-standard quality being manufactured in sub-



standard pharmaceutical firms. Very often, these medicines were withdrawn through a letter from the CMO stating reasons such as low potency, or their being harmful. This had happened twice in the last year when an antibiotic capsule and an antibiotic injection had been withdrawn.

#### 4. Indoor facilities

The PHC had a separate indoor ward containing six beds. We observed that the beds were in good condition and had mattresses, bedsheets, blankets, pillows etc. During the last year, only 30 (16.7 per cent) of the 180 bed days per month had been utilised. A break-up of the utilisation showed that apart from their use for patients with various diseases for an average of 18.6 days per month, they were mostly used (7-9 days) during eye camps. Their utilisation for MCH care and vasectomy was 3.2 and 0.3 days respectively.

#### Pitfalls in the Functioning of the PHC

##### *Availability of doctors*

It was surprising that MO-I of the PHC who was the junior-most of the four PHC doctors, was the only doctor who attended the PHC regularly. The other three doctors belonged to neighbouring districts, where they had their private practice. Perhaps they did not want to work as the subordinates of MO-I. MO-I did not seem to mind their long absences from the PHC because he then remained the sole private practitioner in the area. According to him, he earned around Rs. 2,500 to Rs. 3,000 per month from his private practice. We also observed that the compounder often rejected the medicines prescribed by the PHC doctor. He was often found telling the patients that he would give them better medicines if they paid him some money. One patient, on enquiring, remarked:

"It is better to give Rs. 2-3 to the Compounder Sahib to get better medicines instead of paying the doctor whose charges are higher and then purchasing the medicines from the market".

##### *Co-ordination among field staff*

In a three tier system of PHC, Sectors and Sections, the Sector Supervisors did not seem to have any important supervisory role. All the MPWs working under them received targets for different health programmes individually from MO-I who is at par with the Supervisor. Consequently, the Sector Supervisors were reduced to the level of MPWs due to which co-ordination and team spirit was not maintained at the sector level. Many female MPWs told us that though they were entitled to a female attendant who should accompany them during their visits to the villages, only a few were given

this facility; hence most were unable to function effectively. A discussion on this issue with MO-I revealed that all the female MPWs could not be provided with female attendants due to lack of funds. The other discouraging factor which affected the mobility of field staff was the time lag of two to three years taken to settle travel (T.A. and D.A.) bills.

### *Emphasis given to Family Planning*

Table 3 presents the targets and achievements of the different health programmes undertaken by the PHC during the last three years - 1984-85 to 1986-87. It shows that the PHC had exceeded its sterilisation target during all the three years.

TABLE 3

**Achievements of targets of different programmes by the PHC during the last three years**

Programme	Achievements of target during		
	1984-85	1985-86	1986-87
<b>Family Planning</b>			
Sterilisation	115.1	109.5	102.6
IUD	126.0	84.0	97.0
Oral Pill Cycles	121.3	98.8	82.5
Condom	71.3	71.3	70.0
<b>M.C.H</b>			
T.T. Mother	65.5	26.4	74.3
T.T. 1 year-old children	160.8	110.8	104.4
T.T. 6 year-old children	158.4	186.8	57.6
D.P.T.	51.9	76.6	75.8
D.T.	60.3	78.0	74.0
Polio	20.6	91.7	14.4
B.C.G.	65.8	38.7	21.1
Iron Tablets. Mother	70.2	54.6	84.6

A PHC doctor told the authors that the pressure from the government to achieve sterilisation targets was such that except for the police and revenue departments, all other departments at the block level had been instructed to co-operate with the PHC staff. During 1985-86 eight of the 26 Gram Panchayats under this PHC had received cash awards of Rs. 10,000 each for achieving their targets. (A panchayat which achieves 9 sterilisation and 3 IUD insertions per 1000 population in a year, gets Rs. 10,000 for its develop-

ment programmes). Also, two or three workers in this PHC were regular recipients of cash awards for bringing in five clients for sterilisation per month in a year. Further, MO-I of the PHC had received a gold medal for the last two consecutive years for "best performance" in achieving sterilisation targets. It may be mentioned that each worker was instructed to recruit clients even when he did not have any target couples left in his area.

We also attended a monthly meeting of workers which lasted for about two hours. Most of the time was spent by the MO-I and Block Extension Educator (BEE) in instructing workers to bring in sterilisation cases. Each worker was asked individually to recruit at least five to ten cases of sterilisation. If a worker said that he would recruit two clients, MO-I would insist that he recruit five cases and instruct his BEE to record the same against the worker's name. He also warned the worker that he would withhold his salary if he did not recruit the stipulated number of cases. When we asked MO-I as to why so much emphasis was being laid on sterilisations, he replied:

"I have attended many meetings organised by the CMO at the district headquarter, where very often the Joint Director (Health) is also present. At the meetings, we MO-Is, are instructed time and again to achieve the targets of sterilisation in the shortest possible time because there are strict instructions from the Government to do so. If any PHC achieves these targets before time, its target is increased saying, 'you can do it'. We have seldom been instructed to achieve targets set for temporary methods of family planning."

The pressure on MO-I of the PHC at the end of the year for fulfilling sterilisation target was such that once he requested us to take him in our vehicle to a nearby place where a water tank was being constructed by the Department of Irrigation. At the site, we found at least 600 women working. The MO-I persuaded the overseer in charge of the site to provide him with as many sterilisation cases as he could, so that his PHC could meet the annual target as in past years. He requested the overseer to adopt any technique like motivation, pressure or offering to pay the woman a week's wages during her post-operative rest period. According to MO-I, an employee's performance in the PHC was currently being judged only by the number of sterilisation cases that he/she recruited. In the process, all other health programmes of the PHC were neglected.

The above paragraphs reveal that a lot can be done to improve the PHC facilities not in terms of manpower in position, but in terms of the availability of doctors during work hours, their commitment to their work, and in bringing about a team spirit and cooperation between the various staff members at all levels of the three-tier system. On the other hand, adequate and appropriate medicines and other infrastructural support is also lacking. These shortcomings need to be removed so that the PHC can function efficiently.

Even so, the undue emphasis on sterilisation seems to be a major obstacle in the provision of primary health care, a major function of the PHC. This calls for suitable measures to remedy the situation so as to enable the PHC to offer all the stipulated services efficiently, so that the people it serves can utilise them fully.

#### **ACKNOWLEDGEMENTS**

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# **ADOLESCENCE—A PERSPECTIVE AND A NEED FOR FAMILY LIFE EDUCATION**

**MRS. MANJULA P. RAO\***

## **Introduction**

Adolescence is a complex period which brings with it developmental maturity and certain new problems which centre round the biological, emotional and social aspects of the adolescent's personality. In developed and developing societies, for the majority of adolescents, the school provides the only channel through which they can acquire the education which will develop their intellectual, emotional and social selves and shape the whole of their adult character. Unfortunately, an area which is somewhat neglected in schools concerns knowledge of the growing self. The danger which is inherent in every educational system is that the syllabi are conceived in terms of an imposed corpus of systematic knowledge to be acquired by the pupil. The way in which education functions, and especially the way in which it is imparted to the adolescent, the training given to the young, and the mass information acquired which no one can avoid, all contribute to the dissociation of the personality. Hence there is a need to get an insight into the developmental aspects of adolescence and the problems associated with it, so that a well thought-out system which caters to the sound maturity of adolescents in all aspects can be arrived at.

This paper intends to focus on the adolescent's psychosexual development and the associated problems, and how the introduction of family life education in schools can fulfill the needs and requirements of adolescents and help them to develop a healthier personality.

## **Adolescence and Adolescent Problems**

Many psychologists have identified adolescence with puberty and assumed that the two phenomena are identical in causation and related to each other in very direct ways. Although it has been said that this is by no means strictly true, it is nevertheless necessary to understand the nature of physical change.

Biologically, the onset of puberty breaks the physical harmony and the regularity of late childhood with an initial and rapid spurt in growth which continues to produce anomalies and irregularities for a year or two, accompanied by the development of the primary sex characteristics or sex organs

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and the emergence of the secondary sex characteristics.

Intellectually, a progressive differentiation of mental abilities occurs during adolescence. Individual differences in interests, experiences, rewards and the like influence this trend. According to Inhelder and Piaget's theory,<sup>1</sup> the hallmark of the adolescent's cognitive change is the development of formal operational thought even though it does not occur fully in all individuals. At the stage of formal operation, the adolescent individual becomes capable of an increasing degree of abstraction and generalisation in his conceptual structure. He can operate upon operations which are no longer tied to sensory data. He becomes able to imagine situations which do not exist and which are built up from increasingly abstract principles derived from experience, and of hypothesising and checking hypotheses not only by reference to concrete sensory data, but by the logical application and extension of the abstract principles themselves. He can bring to the solution of an immediate problem, generalisation from earlier abstraction or experience.

Emotionally, the adolescent's emotional pattern depends on both biological and sociological factors. From early infancy, individuals show characteristic emotional patterns that persist over the years. Nevertheless, individual characteristics in the same individual vary in their susceptibility to change. By adolescence, basic emotional habits are well established.

Another major developmental characteristic of adolescence is the acquisition of a sense of personal identity. Erikson<sup>2</sup> stresses that the specific unique task of adolescence is the establishment of 'ego identity'. He says that in puberty and adolescence, all sameness and continuities relied on earlier are more or less questioned again, because of the rapidity of body growth which equals that of early childhood, and because of the new addition of genital maturity. The growing and developing youth faced with this physiological resolution within them and with tangible adult tasks ahead of them, are primarily concerned with how they appear in the eyes of others as compared with what they feel they are, and with the question of how to connect the roles and skills cultivated earlier with occupational prototypes of the day. The development of adolescent characteristics also includes another major task, that is, the establishment of a new balance between 'id' and 'ego' forces which is inevitably necessary because of the qualitative and quantitative changes in drive activity that are concomitant with puberty.

As adolescence is a time of social expansion and development, the adolescent tends to centre a great deal of his life about the activities, interests, and attitudes of his peers, with the result that the peer group assumes greater importance. Nearly all adolescents desire to find acceptance in the eyes of their age mates, and will frequently go to extreme lengths to gain or maintain such acceptance. This throws light on how the adolescent's personality

breaks up during his attempt at a new integration of the personality at a higher and a complex level under the impact of change in himself and in the attitudes of those around him, the uncertainties of role and identity, the emotional rebuffs and occasional social failures, the anxiety in general about who one is and what will become of one. In contact with a much older group and the influence of powerfully increased impulses of sex and self-assertion, and of urgent needs for adjustment, boys and girls are driven to close introspection about themselves, their own motives and an examination of the feelings and motives of others who they seek to understand and please, and from whom they wish to liberate themselves. This implies a considerable development in the power to emphasize, to enter into the roles of others and to understand their feelings. It is in relation to this intensification and extension of the power to emphasise that both a new integration of the personality and a sense of identity, as much as an increasingly suitable understanding of the self as perceived by others develops.

These developmental changes that occur in adolescents cause varying degrees of disturbances in them. The radical body changes that the adolescent undergoes during his or her puberty have psychological as well as physical repercussions. The physical changes determine not only what the young adolescent can do but also what he wants to do, and what he wants to do is largely determined by the physical repercussions of the changes. The psychological repercussions that follow the physical transformation at puberty come mainly from social expectations of mature attitudes and behaviour. One of the most difficult developmental tasks for the young adolescent is the acceptance of his changed body and physique. He or she must not only adjust to the normal changes that accompany puberty, but must also accept a new size and shape as the physique he or she will have for the remainder of his or her life.

The change in the adolescent from a stage of pregenital to genital sexual impulse brings an alteration in the drive. This new element involves the adolescent in dangers which did not exist before and with which he is not accustomed to deal. At this stage, the development of a physical self merges into the development of a sexual self, a much more persuasively important aspect of growth. The central biological fact of the period of adolescence is the emergence of adult sexual potency, and even in the most enlightened and open circumstances, this is the source of disturbance and anxiety. The physical changes themselves, particularly the hormonal rush, the growth of the reproductive organs in a boy and a girl lead to a surge of sexual interest, feelings, and excitement. For those who have been merely informed of the simple biology of sex, or worse still, who have never had their questions answered and have felt their curiosity to be a guilty pleasure shared in sug-

gestively inaccurate or accurate accounts of sexual biology supplemented by secret inspection of each other, the rush of feelings, or the first ejaculation or menstruation, may provoke deep fears.

As the young are possessed of greater physical, mental and emotional capacity, they feel a need to experiment with their own strength and value systems—lead a group, try out intimate relationships, engage in sexual activities and so on, which usually involves a feeling of risk, especially where the sexual self of an adolescent is concerned. Such activities prevent young adolescents from clarifying their attitudes about matters concerning sexuality and push them into clandestine experimentation that often frightens or demeans them. Such ignorance has led to an increase in promiscuity, teenage pregnancies and venereal diseases in young people. Venereal disease in youth is on the increase not only all over the western world, but also constitutes a sizeable public health problem in India. The studies conducted by Joseph<sup>4</sup> and Park<sup>5</sup> show that the incidence of venereal disease is high among the younger age groups due to growing sexual promiscuity and prostitution as evident from the high percentage of patients who have had premarital coitus.

Since the adolescent lives and functions as a member of his family unit during his developmental stage, he runs the risk of allowing the new genital urges to connect with his old love objects, that is, with his parents, brothers or sisters. This leads to an alteration in the ego organisation where serious attempts are made by the adolescent to keep the increase in drive under control as drive capacity has been controlled in earlier periods. This is done by means of major efforts on the side of the defenses which means bringing into play more repression, more reaction formation, more identification and projections, and sometimes also more determined attempts at intellectualisations and sublimations. It means also that the entire defense system of the ego is overstrained and breaks down repeatedly and that, therefore, the frantic warding off of impulses alternates with unrestrained upsurges of drive activity.

In sum, adolescent development is influenced by the biological, psychological and social aspects of the growing individual. Besides this, there are other environmental factors such as the family, the attitudes and values prevalent in the family, and the peer group which also contribute to the adolescent's personality development either in a positive or in a negative way.

### **Need for Family Life Education**

Considering the adolescent stage as a traumatic period, educational centres, state bodies, social welfare and family welfare centres, and other agencies in the West planned certain programmes and courses which resulted in the development of the specialist fields of Sex Education and Family Life Education. In India, though a few social and family welfare agencies, par-



ticularly the Family Planning Association of India, a voluntary body dedicated to the promotion of family planning, have been conducting family life education programmes, the subject has hardly gained any prominence.

The programmes conducted by these agencies are restricted by the time allotted to them by the schools, which naturally results in a concentration on imparting only a certain amount of knowledge or only certain dimensions of knowledge. To obtain sound results, a scientifically planned curriculum of family life education based on the adolescent's needs and requirements should be introduced in schools either as a separate subject or as a part of the school curriculum. It should serve as an educational programme which will help adolescent individuals to develop their physical, psychological and social selves in order to be able to adjust dynamically and without undue strain in the broad society in which they have to live, in their sub-groups at work, in their intimate relationships of friendship, love, marriage and a family of their own. It should take into account the growth and development of adolescents and a few tasks associated with their development, such as: (a) accepting one's physique and using the body effectively; (b) achieving a masculine/feminine social role; (c) achieving new and more mature relationships with age mates of both sexes; (d) achieving emotional independence of parents and other adults; (e) preparing for marriage and family life, and (f) acquiring self-confidence and a philosophy of life.

Taking into consideration the adolescent's needs and characteristics along with a few of the developmental tasks mentioned above, family life education programmes should concentrate on the following themes:

1. Personality development of adolescents where the perception of the biological, psychological and social self of an adolescent is explained, so that he or she will be able to better cope with the emotional reactions which occur along with the pubertal changes. The learning experiences built around this theme should aim at developing in the adolescent a self-understanding and an objectivity about the self, so that it will contribute to the emotional and social growth of the individual. Along with this, scope has to be given to learn to perceive and understand others in order to help make relational improvements.
2. Human sexuality which is a basic response to parenthood should be dealt with by aiming at a better understanding of matters related to human sexuality and the development of sexual attitudes. Knowledge about the misuse of sex and sexual aberrations should be provided in order to help the individual to protect himself against exploitation and maintain his physical and mental health. The subject of venereal disease should be discussed as a biological and a social problem. The consequences of certain problems like teenage pregnancy and promiscuity should be given impor-

tance, so that adolescents can make their own intelligent choice of sexual conduct.

3. Preparation for future parenthood, which comprises the biological, psychological and sociological aspects of the family should be dealt with in order to equip adolescents with the knowledge and understanding of matters related to the physiology of human reproduction and other aspects of family life. Adequate knowledge should be provided to enable them to make decisions about family size and its effect on the quality of family life.

While imparting family life education, one should consider the nature of the learner and the learning process so that various modes and approaches may be used depending on the learner's background, degree of interest, level of knowledge already obtained, and attitudes formed. Teachers should be oriented in teaching the subject in a healthy manner, for which, school authorities should contact specialists in the field.

### Conclusion

Schools have a great responsibility for developing the mental health of their students, and particularly, for developing autonomy—a responsibility which they cannot discharge by merely providing intellectual information. If education for boys and girls at the adolescent stage should be constructive enough to contribute to healthier emotional growth, it must prepare them to enter into a responsible and a healthier adulthood.

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# **FERTILITY AND ADOPTION OF FAMILY PLANNING AMONG MUSLIMS OF 24 PARGANAS, WEST BENGAL (PART-I)**

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and  
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## **Introduction**

The family planning movement made its beginning in India during the mid-1920s.<sup>1,2</sup> With the introduction of the first five-year plan, the Government of India declared and adopted family planning as an official programme<sup>3</sup> with the purpose of controlling the country's high fertility and lowering the growth rate of its population. Since then, the total expenditure on the family planning programme has steadily increased from one five-year plan to the next. Nevertheless, the rate of population growth, though checked marginally, is still alarming and continues to rise steadily, almost unabated.

Many studies have been conducted to evaluate the magnitude and impact of the family planning programme among various population groups in India. Most of these have been at a macro-level. But all of them have effectively brought out the lacunae in these programmes and suggested the introduction of new measures for their improvement<sup>2,4,5</sup>.

Lorimer<sup>6</sup> says, "Mohammedanism gives strong and unequivocal emphasis to high fertility, and Mohammedan social structures universally support high fertility. This is an essential aspect of the zeal for the extension of Islam and the expansion of Mohammedan societies". In India, the fertility rate is, on average, higher among Muslims than among Hindus, since the former are reportedly more reluctant to accept and/or practice family planning.<sup>3,7,9</sup> However, Driver<sup>5</sup> in his study on differential fertility in Central India, observed that there was no uniform relationship between fertility and religion.

The consensus however, is that Muslims are in favour of unrestricted fertility because they are generally not in favour of family planning on religious grounds. But is it true that all Muslim sects are equally resistant to adopt a method to check their fertility? Again, is it only religious consideration that prevents people belonging to different Muslim sects from accepting and

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practising a family planning method? Or, is (are) there any other factor(s) which actually plays a vital role in impeding the adoption of family planning by the various Muslim sects? Before arriving at any general conclusion, it would be necessary to gain a proper insight into these aspects by investigating the various Muslim sects, preferably at a micro-level. With this in view, two dominant Muslim sects, the Shia and the Sunni, residing in and around the same place, and having a more or less similar socio-cultural background were selected with the purpose of studying their fertility and the adoption of family planning measures by them.

### **Sample and Methodology**

The sample was drawn from the Baduria Police Station area of the 24 Parganas district of West Bengal State. As in India, in the state of West Bengal also, the Muslims constitute the second largest group after the Hindus; comprising 20.46 per cent of the total population of the state<sup>10</sup>. In the 24 Parganas district, the Muslim population is above the national average i.e. 23.68 per cent, and in the area under study, from where the present data were collected, Muslims formed an even higher proportion - 55.43 per cent.

Unfortunately, a sect-wise break-up of the Muslim population is not available from the census of India either at the State or district or police station level. However, it is well-known that in West Bengal, the Sunni are significantly greater in number than the Shia or any other sect<sup>11</sup>. Though all the informants permanently live in rural areas, they maintain close contacts with urban centres. The Muslims here are a Bengali-speaking people and agriculture is their main occupation, though some of them, at times, are engaged in other sundry jobs.

The sample comprised of 488 couples (Shia: 155 and Sunni: 333) residing in Khajra, Chandipur (West), Salua and Papulia villages under the Baduria Police Station. Less than one per cent of the total population living in Khajra, Chandipur (West) and Papulia, is non-Muslim, as compared to 20 per cent in Salua. Of the 155 Shia couples, 54 and 101 belonged to Papulia and Salua villages respectively, while the 333 Sunni couples were distributed among all four villages—Khajra (121), Chandipur (168), Papulia (3) and Salua (41).

Data regarding various demographic parameters was collected through a suitable questionnaire as part of a bigger anthropogenetic study of the Muslims of 24 Parganas district. The parameters included fertility, mortality (particularly infant mortality) and reproductive wastage, education and economic status, marriage patterns and marriage distance, in-breeding, attitude towards and practice of family planning, preference for male/female child, etc. One of the spouses was initially interviewed and in most cases

the data were rechecked by interviewing the other spouse. The entire field work was carried out between December 1985 and February 1986.

### Results and Discussion

The results showed that 21.94 per cent of Shia couples were practising family planning as against 18.42 per cent of Sunni couples. This suggests

TABLE 1

#### Method choice of respondents

Method	No. (%)	Shia		No. (%)	Sunni	
		Age at acceptance (years)			Age acceptance (years)	
		Range	Mean ± S.E		Range	Mean ± S.E.
Vasectomy	10 (29.4)	22-41	34.10 ± 1.69	13 (21.7)	28-44	31.46 ± 1.28
Tubectomy	11 (32.4)	20-39	26.73 ± 1.64	14 (23.3)	19-32	26.23 ± 1.13
Oral Pill	5 (14.7)	21-30	24.60 ± 1.40	18 (30.0)	19-34	26.56 ± 1.03
Condom	2 (5.9)	23-27	25.00 ± 1.42	3 (5.0)	21-31	25.67 ± 2.36
Rhythm	—	—	—	4 (6.6)	28-40	33.50 ± 2.16
Self-control	2 (5.9)	39-40	39.50 ± 0.35	3 (5.0)	26-34	30.67 ± 1.94
IUD	—	—	—	3 (5.0)	29-50	37.67 ± 5.18
Coitus interruptus	3 (8.8)	22-29	29.00 ± 0.94	1 (1.7)	28	28.00 ± 0.00
Herbal medicine	1 (2.9)	22	22.00 ± 0.00	1 (1.7)	25	25.00 ± 0.00
Total	34 (100.0)			60 (100.0)		

#### Overall acceptance

Male	22-41	32.76 $\pm$ 1.41	26-50	32.52 $\pm$ 1.18
Female	20-39	25.82 $\pm$ 1.19	19-34	26.39 $\pm$ 0.71

that the Shia are slightly more inclined to accept family planning than the Sunni. This difference between the two sects however, was not statistically significant ( $\chi^2=1.0419$ , d.f. = 1;  $P>0.05$ ).

Table 1 which presents the type of family planning method adopted by the couples, indicates that the Shia seemed to be more in favour of terminal methods (tubectomy and vasectomy) than the Sunni. About, 61.6 per cent of the Shia acceptors had opted for a terminal method as compared to only 45.0 per cent of Sunni acceptors. It is clear that women rather than men of both sects volunteered in greater number for the terminal method.

As regards non-terminal methods, about 30 per cent of the female Sunni acceptors were using oral contraceptives as against only 14.7 per cent of the female Shia acceptors. Hardly 5 per cent of the male acceptors of both sects relied on condoms. The other non-terminal methods such as herbal medicines, rhythm, etc. were used by about 1 to 6 per cent of the adoptors, irrespective of sect.

The mean age at adoption of family planning did not show any difference between sects. It was estimated at 32.76 years for males and 25.82 years for females among Shia couples and 32.52 years for males and 26.39 years for females among Sunnis.

Table 2 shows the overall reproductive performance by family planning status for the two sects. The couple was considered as an adopter when either

TABLE 2

## Reproductive performance by family planning status

Sect and FP status	No. of mothers	Live births		Surviving children		t-value	
		No.	Mean $\pm$ S.E.	No.	Mean $\pm$ S.E.	Live births	Surviving children
Shia							
Adoptors	34	138	4.059 $\pm$ 0.224	115	3.382 $\pm$ 0.191	0.862*	1.588
Non-adoptors	121	455	3.760 $\pm$ 0.265	357	2.950 $\pm$ 0.201		
Sunni							
Adoptors	60	222	3.700 $\pm$ 0.224	192	3.200 $\pm$ 0.185	1.307*	0.253*
Non-adoptors	273	1117	4.092 $\pm$ 0.200	849	3.110 $\pm$ 0.149		

\* Not Significant.

spouse was using one or the other family planning method. The number of surviving children was observed to be greater in the case of acceptor couples of both sects. However, this apparent difference was not real statistically.

The situation was slightly different when the total number of live births was considered. Among the Sunnis, the mean number of live births was slightly lower (3.70) among adoptors than among non-adoptors (4.09). But, among Shia couples, the situation was the reverse, that is the adoptors had a higher mean number of total live births (4.06) than non-adoptors (3.76). This is contrary to the general trend. However, it is quite apparent that the adoption of family planning failed to exert any impact on the reproductive performance of the couples of both sects.

The other aspect which was studied was the rate of infant mortality. The contention is that people would not be interested in adopting a family planning measure if the rate of infant mortality is high, that is, if the parents are not sure of the survival of their children<sup>12</sup>. Table 3 examines the infant mortality rate among adoptors and non-adoptors.

TABLE 3

**Binomial test for equality of proportion for infant mortality**

Sect	Family planning status	T1	T2	Inference
Shia	Adopted x Not adopted	0.0333334	0.0382954	Insignificant
Sunni	Adopted x Not adopted	0.0940502	0.0301164	Significant
Shia x Sunni	—	0.0213494	0.0199865	Insignificant

There seemed to be no difference in the infant mortality rate between the Shia and the Sunni, as evident from the binomial test for equality of proportions. However, when infant mortality was considered in relation to family planning adoption, the results were contrary. Among the Shia, there was no significant difference in the infant mortality rate between adoptors and non-adoptors, indicating thereby that infant loss was not the prime factor against family planning acceptance. On the other hand, there was a significant difference in infant mortality between Sunni adoptors and non-adoptors, with adoptors exhibiting a lower infant loss than non-adoptors. This shows that among the Sunni the infant mortality rate may be an important consideration for family planning acceptance, as suggested by Rao et al<sup>12</sup>. On the basis of these contradictory findings, it is rather difficult to draw a positive inference.

## Discussion

Khan<sup>4</sup> made a detailed study of the family planning practices of

Muslims in Kanpur city in Uttar Pradesh state. He found that about 50.4 per cent of the Muslim couples were using one or the other family planning method. He classified the Muslim population of Kanpur city into two groups (1) Muslims with hereditary occupations, and (2) Muslims with non-hereditary occupations, but did not categorise the results in terms of sects. Thus there is no scope to compare the present findings with those of corresponding sects in U.P or elsewhere.

In the present sample, only about 20 per cent of the Muslims had adopted a family planning measure, in contrast to 50 per cent in Kanpur city. The reason for the low rate of acceptance in this area is a matter of great concern, and merits probing into. Is it due to some religious prejudice against the adoption of family planning? While dealing with the Muslims of Kanpur city, Khan<sup>4</sup> very clearly states that there is no bar in Islam against the adoption of family planning. Then, why do the Bengali Muslims of 24 Paraganas not adopt some measure to gain voluntary control over their reproductive performance? The present study reveals that the rate of adoption of family planning was more or less the same among both the sects, and that more Muslim women than men of both sects (see Table 3) had adopted family planning unlike the situation encountered in Kanpur city<sup>4</sup>. Generally, in a country like India, women are more religiously orthodox than men. This implies that religious prejudice against adoption of family planning may not be the prime reason for the low rate of family planning acceptance by the Muslims of this region.

Rao et al<sup>12</sup> have suggested that the rate of adoption of family planning measures is universally related to the rate of infant mortality in any population. In the present study, infant loss did not seem to influence family planning acceptance in any way. In this context it may also be stated that the family planning measures so far adopted by the two Muslim sects had failed to make any impact on their fertility. It would therefore appear plausible that some other factors could be acting as barriers in the adoption of family planning by the Muslims of this region. Our future endeavour should therefore be to explore the possibility of isolating and identifying these factors.

### Summary

The paper reports the findings of a study of fertility and family planning adoption among two Muslim sects, the Shia and the Sunni. As far as reproductive performance—live-births, surviving children and infant mortality were concerned, there was no significant difference between sects.

Adoption of family planning was found to have failed to create any impact on the reproductive behaviour of these two groups. Also, neither religion nor infant mortality rate had any effect on family planning acceptance.



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# **KNOWLEDGE OF SEX EDUCATION AMONG ADOLESCENTS**

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## **Introduction**

Adolescence is a period of marked physical, social, emotional and cognitive changes. The onset of adolescence is marked by the emergence of secondary sexual characteristics and the attainment of reproductive maturity. In addition to the basic needs of thirst and hunger, the sex need is very prominent during this period. The behaviour of adolescents is dominated by their needs. Adolescents are part of our society and their development depends upon their social interactions. Every society has its own way of guiding young adolescents into the adult world. The social environment provides many occasions wherein adolescents come to know about the importance of sex and the problems related to sex.

Many psychologists believe that sex education (education about human sexuality) begins at an early age and continues throughout the life of an individual. Today's adolescent requires sex education as it is a motivational instrument for creating awareness about sex and for developing correct and healthy attitudes towards sex. It is necessary to provide scientific knowledge and understanding of sexual matters to children, depending upon their age and maturity in order to prepare them to enter into adult life with a wholesome attitude towards sex. Ramsey and Hamilton have proved that children cannot be kept ignorant of sex knowledge. Friends, books, old people, movies and one's own physiological development are the sources that provide sex information to them. Many psychologists have pointed out that sex is an important element in human life and if it is distorted or used badly, it is likely to ruin the whole picture, but when it is used intelligently, it becomes an important element in the adolescent's striving for responsible living.

Experts in family life education agree that the primary responsibility for sex education rests with the parents. Research studies however, have proved that the vast majority of parents do not accept the responsibility for pro-

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viding sex education to their adolescent sons or daughters. Adams<sup>1</sup> reports that schools have increasingly been challenged to accept the responsibility for sex education, as the inadequacy of knowledge among young adolescents and the consequences of their ignorance have drawn public attention. Trivedy et al<sup>2</sup> state that there has been an increasing realisation of the necessity for imparting education about sex including reproductive biology to adolescents. Psychologists and educationists strongly feel that sex education should form an integral part of the regular school curriculum, as this information helps the adolescent to become emotionally stable and to develop a wholesome character.

### **Objectives**

The present study was therefore taken up with a view to (1) compare the knowledge content about sex education of adolescent boys and girls; (2) to study the effect of the educational level of the parents on the knowledge content of their adolescent children, and (3) to find out the sources through which adolescents obtain knowledge about sex.

### **Sample and Data Collection**

The study was limited to two degree colleges from Eluru town of West Godavari district, namely St. Theresa's College for Women and Sri. S.R. Reddy College for boys. A sample of 100 boys and 100 girls was drawn randomly from the Intermediate classes. The ages of the respondents ranged from 15 to 18 years.

A questionnaire was developed in two parts for the purpose of data collection. Part A sought background information about the respondents and Part B assessed their knowledge content and sources of information. A knowledge test using the procedures of Moule<sup>4</sup>, Murthy<sup>5</sup> and Reddy<sup>6</sup> was constructed to measure the following components of sex education:

- i) Anatomy and physiology of the reproductive organs
- ii) Human reproduction
- iii) Family planning methods
- iv) Sexually transmitted diseases.

Each of these aspects was tested through 79 items which were framed into objective questions. The knowledge test was subjected to content validity by 15 experts from various related fields. The reliability co-efficient was found (0.843) by using the split-half method and 53 items were selected for the final test. The test was standardised and the test items were rearranged as 'true or false' or 'fill-up the blanks'.

## Results and Discussion

Table 1 shows that most of the adolescent boys and girls had some knowledge about sex.

TABLE 1

Distribution of knowledge scores of the respondents

Scores:	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
<i>Boys</i>					
Junior with educated parents	2 (8)	—	6 (24)	7 (28)	10 (40)
Junior with uneducated parents	3 (12)	5 (20)	11 (44)	6 (24)	—
Senior with educated parents	1 (4)	3 (12)	5 (20)	10 (40)	6 (24)
Senior with uneducated parents	1 (4)	4 (16)	9 (36)	9 (36)	2 (8)
<i>Girls</i>					
Junior with educated parents	7 (28)	2 (8)	7 (28)	7 (28)	2 (8)
Junior with uneducated parents	9 (36)	3 (12)	7 (28)	5 (20)	1 (4)
Senior with educated parents	2 (8)	4 (8)	8 (32)	4 (16)	7 (28)
Senior with uneducated parents	8 (32)	7 (28)	3 (12)	4 (16)	3 (12)
Total	33 (132)	28 (112)	56 (224)	52 (208)	31 (124)
Percentage	16.4	14.0	28.0	26.0	15.5

Figures in brackets denote percentages

Among children of educated parents, there was a significant difference in the knowledge scores of Junior Intermediate level boys as compared to girls, with boys scoring better than girls. Similarly, Senior Intermediate boys with uneducated parents scored higher than their female colleagues (Table 2). No significant knowledge difference was observed between boys and girls of Junior-Intermediate level whose parents were uneducated and Senior Intermediate level with educated parents. In all the cases, the mean knowledge scores of the boys were greater than those of girls. This could be due to the

fact that boys in general, try to satisfy their curiosity more readily than girls.

There seemed to be a positive association between the age of the respondent and level of knowledge, perhaps due to greater exposure and increased sexual maturity with increasing age (correlation coefficient: 0.178, significant at a 5% level). The educational level of the parents also influenced the knowledge content of the respondent; the higher the educational level of the parents, the greater was the knowledge level of the respondent (correlation coefficients with variables of father's and mother's education were 0.318 and 0.216, both significant at a 1% level). Hence, it can be concluded that educated parents can help their adolescent children to clarify their doubts and anxieties about sex in a more realistic way.

TABLE 2

## Difference in knowledge scores

Parent's educational level	Respondents	Mean Scores	Mean Difference	't'
Educated parents	Junior Intermediate girls	23.48	11.64	3.104**
	Junior Intermediate boys	35.12		
Uneducated parents	Junior Intermediate girls	19.28	4.32	1.25
	Junior Intermediate boys	23.60		
Educated parents	Senior Intermediate girls	28.76	3.64	1.03
	Senior Intermediate boys	32.40		
Uneducated parents	Senior Intermediate girls	21.36	7.24	2.24*
	Senior Intermediate boys	28.30		

\* Significant at 5% \*\* Significant at 1%

The major source of sex information was the teacher (78.4 per cent) and the majority of the respondents had acquired information about sex in their

10th Class (Table 3). This could be due to the fact that some of the components of sex were included in their science books. Friends occupied the second position, and books and mass media occupied the third and fourth positions respectively. It is very clear that parents played a negligible role in providing sex knowledge to their adolescent children.

TABLE 3

Sources from which respondents obtained information regarding sex

Respondents	Parents	Teachers	Books	Friends	Mass Media	Relatives
<i>Boys</i>						
Junior with educated parents	—	19 (76)	13 (52)	2 (8)	6 (24)	—
Junior with uneducated parents	—	5 (20)	12 (48)	15 (60)	4 (16)	—
Senior with educated parents	2 (8)	11 (44)	7 (28)	2 (8)	2 (8)	1 (4)
Senior with uneducated parents	2 (8)	6 (24)	9 (36)	3 (12)	6 (24)	—
<i>Girls</i>						
Junior with educated parents	—	12 (48)	8 (32)	18 (72)	4 (16)	—
Junior with uneducated parents	1 (4)	5 (20)	6 (24)	14 (56)	6 (24)	1 (4)
Senior with educated parents	1 (4)	9 (36)	8 (32)	8 (32)	9 (36)	—
Senior with uneducated parents	—	7 (28)	7 (28)	9 (36)	10 (40)	—
Total	6 (24)	74 (296)	70 (280)	71 (284)	47 (188)	2 (8)
Percentage	3.0	37.0	35.0	35.5	23.5	1.0

## Conclusion

From the above discussion, it can be concluded that adolescent boys and girls, especially the latter, need sound and correct knowledge about sex. Lack of proper sex education can result in emotional and social disturbances during the period of adolescence. It is equally important to educate and train teachers and parents to enable them to provide relevant and accurate infor-

mation to their adolescent children and to help them to develop responsible attitudes and establish satisfying relationships with their family members, friends and the community.

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# **SCALE TO MEASURE ATTITUDES OF NAEP PARTICIPANTS TO POPULATION EDUCATION\***

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## **Introduction**

Research in the field of population education has been making rather slow progress since it is a relatively new branch of knowledge. Knowledge, attitude and practice (KAP) studies pertaining to family planning have attracted attention among researchers throughout the world. However, many have not taken up such studies in the case of population education for obvious reasons. Kaul and Sohan were the first to develop a scale for measuring the attitude of teachers towards introducing population education in secondary schools using Likert's method<sup>1</sup>. UNESCO<sup>2</sup> has also recommended the use of Likert's technique for measuring attitudes to population education. Since then, several workers have used this technique to develop scales for measuring attitudes towards population education of students<sup>3</sup>, teachers<sup>3,7</sup> and parents<sup>8</sup>, while teachers' attitudes towards sex education were studied by Varghese<sup>4</sup> and Rao<sup>5</sup>, and Varghese<sup>4</sup> and Orrawin<sup>3</sup> reported on the attitudes of teachers to family planning. Similarly, the attitudes of teachers and students to the introduction of sex education and population education in schools respectively were studied by Gupta<sup>9</sup> and Prabhakar<sup>10</sup>. In 1983 Rao<sup>7</sup> reported the development of a scale to measure people's attitudes towards population education.

Since India has a massive National Adult Education Programme (NAEP) with population education elements incorporated in it, it was thought worthwhile to develop a scale to measure the attitudes of the NAEP participants towards population education using Likert's technique<sup>1</sup>. As population education covers six main areas, it was decided that a scale be developed for each area, namely Population Dynamics, Human Reproduction, Family Life Education, Health, Food & Nutrition, and Family Planning.

## **The Item Pool**

A large number of books on population education, human reproduction,

\* This article is based on the Ph.D. thesis of the author, titled 'Knowledge, attitudes and practice of Population Education among NAEP participants'.

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family life education, health, food and nutrition and family planning were studied and appropriate statements were collected. Also, some more items were gathered from discussions held with project officers, supervisors, instructors, learners, villagers and village leaders in the areas selected. A few appropriate items in other scales were also taken. At this stage, there were about 70 statements in each pool of draft items for each area. These statements were shown to five experts who screened them for accuracy of content, ambiguity and repetition, and suggested modifications/deletions. The experts suggested the elimination of a few statements which were ambiguous and the modification of a few others. After effecting these changes, the statements were reviewed and edited in accordance with guidelines suggested by earlier workers<sup>1-15</sup>.

As a result of the rigorous culling-out procedure, 33 statements on population dynamics, 16 on human reproduction, 30 on family life education, 41 on health, 38 on food and nutrition and 22 statements on family planning finally came to stay. Almost half of the statements in each of these areas were worded in the negative while the remaining were formulated in the positive form. As a result, there were 18 positive and 15 negative statements under Population Dynamics, 9 positive and 7 negative statements under Human Reproduction, 15 positive and 15 negative statements under Family Life Education, 19 positive and 22 negative statements under Health, 16 positive and 22 negative statements under Food and Nutrition, and 12 positive and 10 negative statements under Family Planning.

The statements under each area were then randomised and four-point responses given against each item, namely, strongly agree (SA); Agree (A); Disagree (DA); and Strongly Disagree (SD). The statements were then cyclostyled along with standard directions and administered to 30 NAEP participants selected at random from three centres to know whether these statements could be easily understood by the participants. From this preliminary try-out, it was confirmed that the participants easily understood the statements and readily responded to them.

### **Try-Out of Statements**

The statements were administered to a sample of 370 NAEP participants selected by a three-stage proportionate random sampling procedure. Prior to administration, the instructions were read out loudly to the respondents and they were asked to listen to each of the statements carefully and to indicate orally their degree of agreement or disagreement as per the category of responses given. The responses expressed by the respondents were noted by putting a tick mark (✓) against each statement in the brackets provided alongside the statement of the protocol. The data were collected by personally

visiting the centres.

### Scoring of Statements

The statements were scored in accordance with the general practice of assigning the following numerical values to the positive and negative statements as shown below:

Nature of statement	Strongly Agree(SA)	Agree (A)	Disagree (DA)	Strongly Disagree (SD)
Positive	4	3	2	1
Negative	1	2	3	4

Thus the six attitudes scales were planned and developed separately. While analysing the items of a scale, the total score of that scale alone was taken into consideration to delineate the criterion groups. The total score on statements pertaining to Population Dynamics ranged from 33 to 132; on Human Reproduction from 16 to 64; on Family Life Education from 30 to 120; on Health from 41 to 164; on Food and Nutrition from 38 to 152, and on Family Planning from 22 to 88.

### Selection of Items

Under Likert's method, the final selection of items can be done by some form of item analysis. As the try-out was conducted on 370 participants, 100 respondents (27 per cent) with the highest total scores and 100 (27 per cent) respondents with the lowest total scores formed the 'high' and 'low' groups. These were the criterion groups and using them, the 't' values were calculated for each item as suggested by Edwards<sup>15</sup>. The 't' values give the discriminating index for each item which determines the extent to which each item goes along with or measures the same thing as the total test (scale) in which it is included. As suggested by Edwards, a statement whose 't' values are equal to or greater than 1.75 were retained for inclusion in the final version of the scale. Statements with 't' values equal to or greater than 1.75 are given in Appendix A.

The final attitude scales thus contained Population Dynamics:19 statements (10 positive + 9 negative); Human Reproduction: 11 statements (6 positive + 5 negative); Family Life Education: 16 statements (10 positive + 6 negative); Health:23 statements (10 positive + 13 negative); Food and Nutrition:18 statements (7 positive + 11 negative); and Family Planning:7

statements (3 positive + 4 negative). In all, there were 93 statements in the six scales (Appendix A).

### **Reliability of the Attitude Scales**

The co-efficients of reliability and validity were established on a random sample of 100. These 100 protocols were drawn at random (using random numbers) from the 625 protocols of the final study based on a three-stage proportionate random sampling. Hence, the sample of reliability and validity was justified. For each attitude scale, split-half reliability was established which was very much justified in the case of all the scales. The half-test co-rrelations and the whole-test co-rrelations after application of the Spearman-Brown prophecy formula are given in Table 1.

TABLE 1

**Split-half and whole-test co-efficients of reliability for the Population Education Attitude Scales**

Attitude Scale for	Split-half reliability co-efficient	Whole-test reliability co-efficient
Population Dynamics	0.6618	0.7965
Human Reproduction	0.8341	0.9095
Family Life Education	0.7371	0.8487
Health	0.6177	0.7637
Food and Nutrition	0.8016	0.8899
Family Planning	0.6125	0.7597

### **Validity of the Attitude Scales**

The attitude scales were found to possess content validity, item validity, face validity and intrinsic validity.

#### ***Content Validity***

Literature pertaining to each of the scale areas was consulted and an attempt was made to see that the items included in the scales were a representative sample of the universe of items of the scale. The scale items were subjected to scrutiny, criticism and comment of not only the experts in the field but also approved by project officers, supervisors and instructors working in the NAEP Programme in Andhra Pradesh. Hence, the scales possessed content validity.

*Item Validity*

The discriminating index was calculated for all the items and those items having discriminating power (1.75) were retained. Hence, the scale items were valid.

*Face Validity*

It may be said that the scales fulfilled the requirements of face validity, for they were designed to measure attitudes towards population education. Also, when the scales were shown to a few lay persons, who had no knowledge of the construction of attitude scales, they felt that these scales were designed to measure such attitudes. Even from this point of view, it may be said that these scales fulfil face validity requirements. Lindquist<sup>16</sup> says: 'A test is face valid if it looks valid, particularly if it looks valid to lay men'.

*Intrinsic Validity*

Intrinsic validity or index of reliability<sup>17</sup> is indicated by the square root of the proportion of true variance, in other words, the square root of its reliability. The reliability co-efficients calculated by using the split-half method for the scales, are given below. The square root of these co-efficients that measure true variance are also given in the table.

TABLE 2

**Intrinsic validity of the attitude scales**

Attitude Scale for	Reliability co-efficient	Intrinsic validity
Population Dynamics	0.7965	0.8924
Human Reproduction	0.9095	0.9536
Family Life Education	0.8487	0.9212
Health	0.7637	0.8738
Food and Nutrition	0.8899	0.8738
Family Planning	0.7597	0.9433

The co-efficients of intrinsic validity given in Table 2 are high indicating that the scales possess intrinsic validity. Therefore, from all counts, as discussed above, it may be said that the scales used in the study fulfilled the requirements of validity and possessed justification for use for measuring attitudes of NAEP participants towards population education.

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## APPENDIX

## ATTITUDES TOWARDS POPULATION EDUCATION

Strongly Agree	- (SA)	Agree	- (A)
Disagree	- (D)	Strongly Disagree	- (SD)

## I. Attitudes towards Population Dynamics

	SA	A	D	SD
1. India should not face the problem of over-population in future	( )	( )	( )	( )
2. Population in India is uncontrollable	( )	( )	( )	( )

	SA	A	D	SD
3. More number of young people in the population is not a burden to the country	( )	( )	( )	( )
4. Rapid growth of population will cause a food problem in India	( )	( )	( )	( )
5. The present socio-economic problems in India are due to rapid growth of population	( )	( )	( )	( )
6. Unemployment in India is not due to over-population	( )	( )	( )	( )
7. Rural under-employment is due to rapid population growth	( )	( )	( )	( )
8. The quality of life in India will deteriorate with the increase in population	( )	( )	( )	( )
9. Population growth will nullify the effects of development	( )	( )	( )	( )
10. Increase in illiteracy in India is not due to rapid population growth	( )	( )	( )	( )
11. Pollution does not increase with the increase in population	( )	( )	( )	( )
12. The more the people, the more is the depletion of natural resources	( )	( )	( )	( )
13. Population growth in India is not causing housing problem	( )	( )	( )	( )
14. Registration of births and deaths is unnecessary	( )	( )	( )	( )
15. Population increase is not the reason for land holdings in rural India to get fragmented	( )	( )	( )	( )
16. National development in India is retarded by over-population	( )	( )	( )	( )
17. Over-population in urban areas is caused by people migrating from rural areas	( )	( )	( )	( )
18. Lack of adequate transportation facilities has its genesis in over-population	( )	( )	( )	( )
19. Over-population in a country gives rise to crime and law and order problems	( )	( )	( )	( )
20. Over-population is not a cause of poverty.	( )	( )	( )	( )

## II. Attitudes towards Human Reproduction:

1. Premarital sex is to be allowed in society	( )	( )	( )	( )
2. Sexually transmitted diseases are not due to 'Karma'	( )	( )	( )	( )
3. Sex education helps in solving the sexual problems of the people	( )	( )	( )	( )
4. Extramarital sex should not be permitted	( )	( )	( )	( )

<b>II. Attitudes towards Human Reproduction (Contd.)</b>				
<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>	
5. Sex education is necessary in Adult Education	( )	( )	( )	( )
6. The birth of a child is God's will	( )	( )	( )	( )
7. Abstinence should be observed during sacred days	( )	( )	( )	( )
8. Sex should not be discussed openly	( )	( )	( )	( )
9. Having children is not a demonstration of one's manliness	( )	( )	( )	( )
10. The disappearance of hymen is a sign of loss of virginity	( )	( )	( )	( )
11. A pregnant woman should not expose herself to the sun or the moon during the eclipse	( )	( )	( )	( )
<b>III. Attitudes on Family Life Education:</b>				
1. Family life education helps better family planning	( )	( )	( )	( )
2. Boys and girls should be given freedom in mate selection	( )	( )	( )	( )
3. Arranged marriages are ending successfully	( )	( )	( )	( )
4. Arranged marriages make family life happy	( )	( )	( )	( )
5. Women should be given equal status with men	( )	( )	( )	( )
6. The dowry system should be discouraged	( )	( )	( )	( )
7. Employed women do not spoil family life	( )	( )	( )	( )
8. Employment of woman hinders proper care of children	( )	( )	( )	( )
9. Inter-caste marriages are not the symbol of modernisation	( )	( )	( )	( )
10. Limited number of children leads to joy in life	( )	( )	( )	( )
11. Male children are preferable to female children	( )	( )	( )	( )
12. One must have a son to carry on the family name in the next generation	( )	( )	( )	( )
13. A person having a larger family than he is capable of bringing up, is morally irresponsible	( )	( )	( )	( )
14. It is unfair to insist upon the minimum age at marriage for boys and girls	( )	( )	( )	( )
15. It is ideal to have two or three children irrespective of their sex	( )	( )	( )	( )
16. May parents presume that having more number of children is a security.	( )	( )	( )	( )

	SA	A	D	SD
<b>IV. Attitudes on Health</b>				
1. The health services available in India in relation to its population are adequate	( )	( )	( )	( )
2. Infant mortality in India is higher due to inadequate health facilities	( )	( )	( )	( )
3. Health education programmes do not help in increasing the health status of the people	( )	( )	( )	( )
4. It is not harmful to drink unsafe water	( )	( )	( )	( )
5. Deliveries could be attended by knowledgeable traditional 'Dais'	( )	( )	( )	( )
6. Open air defecation has nothing to do with environmental pollution	( )	( )	( )	( )
7. The deadly diseases of the parents will be transmitted to their off-spring very easily	( )	( )	( )	( )
8. Chickenpox cannot be cured by modern medicines	( )	( )	( )	( )
9. Chickenpox occurs due to the curse of the goddess	( )	( )	( )	( )
10. It is beneficial for the villagers if we teach them about the various methods of disposal of waste	( )	( )	( )	( )
11. One need not clean teeth daily	( )	( )	( )	( )
12. Every one should take a bath daily	( )	( )	( )	( )
13. Immunisation of children is not necessary	( )	( )	( )	( )
14. All infection diseases are not curable by traditional health practices	( )	( )	( )	( )
15. Deadly diseases occur due to 'Karma'	( )	( )	( )	( )
16. Prenatal care for pregnant mothers is not necessary	( )	( )	( )	( )
17. It is good to have deliveries in the hospitals	( )	( )	( )	( )
18. Alcoholism is good for health	( )	( )	( )	( )
19. Smoking is injurious to health	( )	( )	( )	( )
20. Anaemia is not curable	( )	( )	( )	( )
21. Over-population creates health and hygiene problems	( )	( )	( )	( )
22. Spacing of children is necessary to ensure mother's health	( )	( )	( )	( )
23. It is good to take the children to the barber for 'mantras' for better health of the children	( )	( )	( )	( )



<b>V. Attitudes towards Food and Nutrition</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
1. Eating a balanced diet is good for health	( )	( )	( )	( )
2. Certain foods are harmful during pregnancy	( )	( )	( )	( )
3. Breast-feeding is better than bottle feeding	( )	( )	( )	( )
4. Children can be given semi-solid foods within one year	( )	( )	( )	( )
5. In general the nutritional status of a family is affected by its size	( )	( )	( )	( )
6. The present nutritional programmes in our state are beneficial to us	( )	( )	( )	( )
7. Breast-feeding affects the health of the mother	( )	( )	( )	( )
8. Breast-feeding is not desirable for working women	( )	( )	( )	( )
9. Nutritious diet gives protection against diseases	( )	( )	( )	( )
10. Observation of the prescripts of 'gotras' in avoiding certain food items is good	( )	( )	( )	( )
11. In a family the women should take food last of all	( )	( )	( )	( )
12. The bread-earner of the family should be given preference in food	( )	( )	( )	( )
13. A women suffering from fever should give up breast-feeding temporarily	( )	( )	( )	( )
14. It is not necessary to sterilise the bottle during each feed of a baby	( )	( )	( )	( )
15. Fasting on certain days is good	( )	( )	( )	( )
16. Milk is not necessary for adults	( )	( )	( )	( )
17. Fruit juices cause cold	( )	( )	( )	( )
18. Eating fish causes worms	( )	( )	( )	( )
<b>VI. Attitudes towards Family Planning</b>				
1. Family planning is good	( )	( )	( )	( )
2. Scientifically approved methods of family planning are good	( )	( )	( )	( )
3. Natural methods of family planning should be discouraged	( )	( )	( )	( )
4. Medical termination of pregnancy is injurious to the health of the mother	( )	( )	( )	( )
5. It is difficult to use intrauterine devices in villages	( )	( )	( )	( )
6. The condom is not a reliable method of family planning	( )	( )	( )	( )
7. Condoms should be made available everywhere, free of cost	( )	( )	( )	( )

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# **ACCESS TO HEALTH AND FAMILY PLANNING SERVICES IN RURAL UTTAR PRADESH: A MICRO-LEVEL EVALUATION**

**DR. M.E. KHAN+  
DR. RICHARD ANKER++  
and  
MR. S.K. GHOSH DASTIDAR\***

## **Introduction**

Studies of human behaviour are usually carried out with information provided by one set of factors. Thus, studies relating to fertility or health behaviour are generally based on either individual, household, village, district or national level data. It is unusual to mix information from different levels of aggregation in a multi-level analysis. Even more unusual are in-depth qualitative type studies based on multi-level information where each set of information is designed such that the information collected at one level refers to the behaviour of factors at the other level.

The present paper provides an interesting exception. It investigates the accessibility of health care services of people living in a typical North Indian village using in-depth information collected by social scientists using anthropological techniques. Information on aspects of available public health facilities such as distance from village, hours open and quality of services, are juxtaposed against the opinions and behaviour of villagers with respect to these services. In the process, what exists according to government documents is quite different from what actually exists in the village; that villages make very little use of government health services - preferring instead (unqualified) private medical practitioners. The reasons why villagers do not make much use of public health facilities are also investigated. By combining specially matched data collected from individuals with specially matched data on community facilities, it becomes possible to learn much more about the situation of health care than from data from either source alone would allow.

## **Background**

The Government of India has made a major effort to improve health con-

\* Operations Research Group, Dr. Vikram Sarabhai Road, Baroda 390 007, India.

\*\* International Labour Organization, Geneva, Switzerland.

ditions and reduce population growth. As a result, over time, the health infrastructure in the country has increased manifold. As of 1st April, 1988 there were 16,449 Primary Health Centres (PHCs), 109,644 sub-centres, 3,745 subsidiary health centres and 1425 upgraded PHCs in the country.<sup>1</sup> Special attention has been paid to family planning in order to increase its acceptance by propagating the small family norm and making family planning services easily accessible.

The impact of these efforts has been at least partially responsible for reducing mortality rates, and increasing the awareness, knowledge and acceptance of family planning. Recently, a modest decline in infant mortality has also been witnessed. However, at the same time, success is well below expectation. Infant mortality is still very high and was reported to be 96 in 1986.<sup>1</sup> Also, despite an increase in the contraceptive prevalence rate from 22.8 in 1980-81 to 37.5 in 1986-87, the birth rate has remained stagnant around 33.0.<sup>1</sup> According to a recent national evaluation of the family planning programme, 39.8 million Indian couples not wanting additional children were exposed to the risk of unwanted pregnancies in 1980, and another approximately 8.2 million couples depended on unreliable methods for protection.<sup>2</sup>

Furthermore, it was found that within the country, the benefits of government health programmes had not reached all the regions uniformly, and a wide difference existed both in the level of infant mortality as well as in the acceptance of family planning among the various states of India. For example, in 1984-86, the infant mortality rate ranged from 29 in Kerala to 143 in Uttar Pradesh, and the contraceptive prevalence rate among eligible couples as on 31st March, 1987 ranged from 20.6 in Bihar to 62.4 in Punjab.<sup>1</sup> Similarly, within each state, the health and family planning situation was better in urban areas than in rural areas.

Yet another disturbing phenomenon which was observed and is being seriously debated is the existence of differential benefits of modern health facilities and family welfare services by gender. The expectation of life at birth is reported to be higher for males (55 years) than for females (52 years) - a reversal of the pattern found in almost all other countries. The continuous decline in the sex ratio (females per 1000 males) from 1911 to 1971 indicates that the fruits of modern health services have gone more to males than to females.

These observations raise many issues. For example, why, despite such a massive effort to raise health conditions and to arrest population growth, has there only been limited success? Similarly, why has the distribution of benefits from the public health infrastructure favoured one area and one sex? Answers to questions such as these are crucial for policy makers who are

responsible for ensuring an equitable distribution of benefits among different regions as well as among people belonging to different castes and classes, and by gender.

One of the major reasons for this knowledge gap is that most of the available studies are based on sample surveys which are limited in their ability to capture social realities, especially the dynamics of acceptance of family planning and health-seeking behaviour. In the present paper, some of these unanswered questions are addressed using qualitative data from village, household and individual levels.

### **Data and Study Area**

The present study is based on data collected for the ORG-ILO collaborative project entitled 'Changing Roles of Women and its Impact on their Demographic Behaviour'. The study was conducted in three areas of Uttar Pradesh (UP), a northern state of India with a population of approximately 110 million persons in 1981. Two of the villages were located in western UP - in Agra and Mathura Districts, and the third in the east. West UP is relatively more developed than the east.

Trained male and female social scientists were positioned in each study village for a year to collect the relevant information. The design and other details of the study have been reported elsewhere.<sup>1,4</sup> The present paper is based largely on information collected from one of the two study villages in western UP. Supportive evidence from the other two villages, as well as studies conducted in other parts of the country, are also used to strengthen the findings where relevant.

The study village, Krishanpur, was situated at a distance of about 20 km. from both Mathura and Agra cities. A regular bus service connects the villages with the two urban centres. Population-wise, it is the second largest village of Bahadurpur Block. Excluding its hamlets, its population of 2,676 was the focus of the present study. Ninety-four per cent of the residents were Hindu and 6 per cent were Muslim.

More than half (55 per cent) of the economically active male population earned their livelihood through non-agricultural vocations such as services, teaching, and cash-related professions (weaving, sewing, pottery, business, sweeping, etc.), and one-third of the men (37 per cent) were engaged in farm-related activities. Among the women, 20 per cent worked for cash - half as farm or construction labourers and the remaining half doing sewing or assisting in pottery, weaving etc; 13 per cent were engaged in farm-related work for the family and the rest looked after the home exclusively. With four schools in the village, the spread of literacy was good; nearly 60 per cent of the males

and 20 per cent of the females aged 5+ had received some formal education.

These statistics demonstrate that Krishanpur is not a typical remote Indian village characterised by a predominantly agricultural economy and mass illiteracy. It had attained certain urban characteristics in terms of education, occupation, etc. due to its proximity to major urban centres. Despite this, as the findings will show, Krishanpur has retained many of the characteristics, beliefs and practices typical of the Indian masses in rural areas.

The social scientists who lived in the village were provided with a field guide<sup>5</sup> which indicated the topics, issues and questions to be addressed. The field guide also indicated how each type of information was to be collected - whether it would be through observation, regular data collection or informal discussion and interaction with the informants. Examples of 'matched' community level (to be addressed to health personnel) and individual level (to be addressed to main informants) field guide elements on utilisation of public health care facilities are provided in Appendix I.

Twenty female informants (and their husbands) belonging to different caste and class groups were selected for in-depth study. During data collection, which spread over a one-year period, the social scientists gradually developed a good rapport with the villagers, particularly with the main informants, and relevant information was collected through detailed discussions and participant observation techniques. It was found that this yielded reliable data and that the immediate responses of informants and impressions of field workers were sometimes incorrect. For example, initially, the villagers repeatedly told us that there was no discrimination in health care by sex; however, over time, through observation, close contact and a high level of rapport, we found that the actual situation was quite different.<sup>6</sup>

### **A. Availability and Accessibility of Health Services: Community-level Information**

#### ***General Background of Government Health Infrastructure:***

In 1981, the total population of the administrative area of the block spread over 70 villages, was 134,000. The government infrastructure for meeting the health and family planning needs of the block consisted of a PHC, a civil dispensary and ten sub-centres. Both the PHC and the civil dispensary were located at the block headquarters, and the sub-centres spread over different villages within the block. Each sub-centre usually serves about 10,000 persons.

Krishanpur, the study village, is situated at a distance of about 2.5 kilometres from the block headquarters where the PHC and the civil dispensary are located. It is connected to the PHC by an all-weather road. During the day, cycles, cycle rickshaws and tongas (horse driven carriages) ply the

road, but after dusk, no transport is available and one has to walk the distance. Within the village, there is a sub-centre established about six months before the study began. It is run by an ANM (trained nurse) and a traditional dai.

At the time of the study, the PHC had a staff strength of 38 of whom 18 were posted at the PHC quarters and 20 in the sub-centres. Although there were 20 female paramedical staff, there were no lady doctors. The two male doctors posted at the PHC looked after all the cases.

#### *General Condition of the PHC Servicing the Study Village:*

The poor condition of the PHC was apparent to anyone who visited it. It was housed in a dilapidated, rented building consisting of three rooms - a veranda, an open courtyard and a narrow gallery. The courtyard had a cattle-shed in one corner where the landlord of the PHC kept his cattle. The foul smell of cattle dung and urine was inescapable. One room was used by the two male medical officers, who shared a table and sat opposite each other while examining patients. The second room was utilised by the pharmacist to dispense medicines. The third room was used as a store room-cum-office.

The PHC had been at the present site for the last 15 years and remained more or less the same except for deterioration of the building. No drinking water was available within the PHC premises, nor was there any waiting room for the patients, who generally congregated on the veranda and sat on the floor or shared the two benches placed there. The PHC was equipped only for outpatients.

The PHC was officially open from 8.00 to 11.00 a.m. and from 3.00 to 5.00 p.m. However, these hours were rarely kept as the doctors did not come on time and at times, never showed up.

A new patient was charged 50 paise as a registration fee. Medicines, if available at the clinic, were provided free of charge, otherwise patients had to buy them from the market. On average, a patient had to wait for 30 to 45 minutes to get his/her turn, but they could never be sure whether the doctor would be in when they did get there. In any case, the doctors did not pay adequate attention to them and fulfilled their duties casually.

When the authors checked out the negative opinions and complaints of the villagers about the public health services (see Discussion) with the doctors at the PHC and civil dispensary, they refuted charges of being indifferent or callous to their patients. However, they agreed that often important medicines were not available and they had to ask the patients to buy them.

#### *General Condition of the Civil Dispensary Servicing the Study Village:*

The civil dispensary is located in the study village. It is yet another clinic



meant for supplementing the efforts of the PHC in providing health and family welfare to the rural people. The condition of the civil dispensary was also poor. It was situated in a run-down building (uncared for the last ten years) in a big compound surrounded by walls. There were three rooms - two were huge, one being used for clinical examinations, and the other for storage and dispensing of drugs. The third room was used as an operation theatre and was being renovated at the time of the authors' visit in view of a special sterilisation camp to be held for the first time in the block. The dispensary had a provision for ten beds, though in reality, no beds, cots or mattresses were available.

The dispensary was open for five hours in the morning (from 8.00 a.m. to 1.00 p.m.) and for two hours in the evening (from 3.00 to 5.00 p.m.). The staff consisted of a male medical officer, a compounder and a watchman. The clinic was used mainly by those few who needed consultation, as it had very few medicines to dispense. Commenting on this situation, the medical officer of the dispensary said:

We don't even have cotton and bandages to cover wounds. I am only a consultant here to examine patients and write prescriptions. Some people come to me only for examination. They take a prescription and then go to PHC to get the medicine, if available. Family planning services are nil. The available stock of condoms has crossed the date of expiry and there has been no replacement. The last vasectomy operation in this dispensary was done in 1977. Now we are getting ready to hold a female sterilisation camp. I am happy as in the process of preparing for the sterilisation camp, my operation theatre may become operational.

The major reason for the non-availability of medicines was that the quantity of medicines supplied was much less than that requested. This, according to a local health official, was mainly attributed to the fact that a fixed amount of money is allocated to each PHC for medicines, and that this is about one-tenth of the need or requested allocation.

### *Government Health Sub-centre in Study Village*

Within Krishanpur there was a PHC sub-centre with an ANM and a trained dai attached to it. The centre was established about six months before the initiation of the study. For the residents of Krishanpur, however, the centre was of no use because it had hardly opened. During a recent visit to the village for 20 days, we did not see the village health centre open for even a day. On enquiry, a person who lived close to the sub-centre said:

She hardly comes here. I have been told that her duty is to visit 12 nearby villages. She takes advantage of this and stays at home. When officers come for inspection she gives the excuse that she had been to another village for extension work. Officers hardly go to verify.

We were informed that the absence of the ANM from duty had been

reported to the higher authorities but no serious action had been taken so far. During discussion a known figure of the village commented:

She has close links with the higher authorities and hence nothing happens. She is more eager in maintaining her links rather than doing any work. Previously she visited the centre once or twice but now she does not come at all. Because of her connections with influential authorities even the PHC doctor has not much control on her.

The village Pradhan (panchayat head) informed us that the matter had been brought to his notice, and that he was preparing to take up the matter with the Block authorities.

### *Village Health Guide in Study Village*

Apart from the government health functionaries attached to the PHC, civil dispensary and sub-centre, each village has a Village Health Guide (VHG) under a government scheme where the volunteer guide has to be selected by the community. The selected person gets three months of training at the PHC on various health preventive measures and treatment for minor sicknesses. The Village Health Guide is not a government functionary and he/she provides services on a voluntary basis. In return, the government provides him/her with an honorarium of Rs. 50 and a packet of medicines worth Rs. 50 per month.

The study village also had a VHG. He had five years of formal schooling and came from a low caste family. He was provided with a kit containing medicines for ailments such as malaria, coughs and colds, fevers, etc., and was also supposed to maintain liaison between the community and the PHC. Since he owned about six acres of land, and was the only male member of his family, he was very busy with his farm work and hardly had time to discharge his responsibility.

### *Private Practitioners in Study Village*

Apart from the health facilities provided by the government, the study village had 12 private practitioners. None of them was qualified. Yet, as will be explained below, these private practitioners were the main source of medical assistance for the inhabitants of Krishanpur. Indeed, a census of all households in Krishanpur which we conducted, showed that in the month preceding the census, 88 per cent of those (163) who reported to have fallen sick and taking treatment were treated by private practitioners. The dispensary and PHC registers corroborated these data. They showed that only approximately 4-5 patients visited the clinic per day. Even the much larger PHC attracted only about 25-30 patients per day, and most of these patients came from the PHC

village itself.

All the 12 private medical practitioners of the village used allopathic medicines, although none was formally qualified to do so. Two of them had obtained a formal degree in Ayurvedic medicine - both made lavish use of allopathic drugs as they gave quicker relief than herbal drugs. Yet another was a trained pharmacist and had a roaring practice in the village. He earned anything between Rs. 30-50 per day, and sometimes more. The remaining private medical practitioners in the village had only some years of schooling. They had learnt the use of allopathic medicines by working as assistants to doctors within the village or outside.

Ten of the doctors were resident in the village while the other two visited Krishanpur for 4-5 hours, twice or thrice a week. One of them was reported to be mainly helping in carrying out illegal abortions, charging anything between Rs. 50-200. He charged more if pregnancy occurred to unmarried girls or to married women due to extra-marital relations. Only four practitioners had a fixed place to examine patients. Others attended calls and operated from home. Two doctors each owned a pharmacy in the village. They examined patients and provided medicines as well. Others issued prescriptions. Some injections and tablets were also given if available at home. Normally each visit did not cost the patient more than Rs. 3-5. All the practitioners came from high caste families. The biography of a typical village practitioner is narrated below:

Mr. Sudhakar is 45. He comes from a Brahmin family. After spending 12 years in school, he lost all interest in studies. For two years he wandered here and there. Then with the help of one of his relatives he registered for a pharmacist's course. Later, he joined a senior doctor of Agra city as his assistant. He worked with him for two years. In this period he became familiar with the symptoms of common ailments and the medicines used to heal them. He came to Krishanpur with the help of a family into which a girl from his native village had married. He selected the village and settled down to private practice as at that time there were no allopathic doctors in Krishanpur (except two practitioners of Ayurvedic medicines, or vaid). Today, Mr. Sudhakar is reputed to be the best doctor in the village. Normally, patients come to his house. If required he pays home visits too. He has no fixed visiting hours.

He is available at all times. Normally he charges a patient Rs. 2-5, which would include the cost of an injection and/or some medicines. He maintains a small stock of important medicines at home; for other medication, if required, he advises his patients to go to a particular pharmacy. The pharmacy pays a commission to Mr. Sudhakar for giving them business. If a seriously ill patient requires better medical attention, Mr. Sudhakar accompanies him to the city hospital and helps him/her to get admitted. In return, he gets Rs. 60 a day apart from conveyance, food, etc. If necessary, he even spends two to three days with the family for advice or consolation if the condition of the patient is very serious. Mr. Sudhakar examines his patients with a stethoscope, but we are not sure if it is only for show or if he understands it. After giving an injection, he never washes the syringe before using it again and again.

### *Access to Curative Health Care: Villagers' Perspective*

Information collected from the community presents a discouraging picture on the quality of public health services, and to some extent explains why villagers do not use these services. In the following paragraphs to get the villagers' perspective, their views on the health services provided by the government and its under-utilisation has been discussed.

Informal discussions with our main informants and other villagers revealed that they did not utilise government services because they felt that they got good treatment at a reasonable cost in the village itself. Moreover, village practitioners did not keep fixed clinic hours and their services were available even at night. In case an illness became worse, the village practitioner accompanied the patient to a city hospital where he, through his own contacts and resources, helped the patient to get the necessary facilities and services. In turn, he was paid for his assistance. The villagers were quite satisfied with this arrangement. Clearly, the easy accessibility of private practitioners, together with their good personal rapport and concern, were important in gaining the confidence of villagers.

Indeed, these private practitioners were the only source which many villagers looked to for treatment. The government PHC sub-centre located in the village was of little use to them as it was hardly open, as the ANM in charge seldom reported for duty. Visits to the PHC or the civil dispensary were expensive and bothersome due to their distant location, a single trip requiring two to three hours. For adult males especially, this sometimes meant loss of wages and disruption of other important work. If a child was sick and the mother had to accompany it to the PHC, the whole household schedule got disturbed. On the other hand, if a rickshaw was hired, it cost a minimum of Rs. 4. After bearing all these costs, the necessary drugs might not be provided and the doctor might not be there. In any case, the PHC provided only inexpensive medicines and asked patients to buy more costly medicines from the market. If the disease continued, the patient would have to make frequent visits to the PHC. This meant more loss of time and additional expenses on transportation. For most of the poor villagers it was beyond their means and hence they preferred to be treated by non-qualified village practitioners rather than by qualified government doctors. In the village, out of the 20 female main informants, only 6 had ever visited the PHC for treatment. Similarly, only 12 of their husbands had utilised the services of the PHC. Some of the explanations given by the informants for not utilising the services of the PHC are reproduced below:

**Raghu Rai, a shopkeeper, who had never visited the PHC, said:**

I avoid going to the PHC because to get treatment from there, one has to travel 2.5 kilometres and it is not possible every day leaving the shop behind.

His wife, who was a participant in the discussion, added:

When we can be cured by the village doctor himself, what is the use of going to the PHC and standing in the queue?

Of the eight males and six females who had utilised the PHC (none of our informants used the civil dispensary), 7 males and 3 females expressed unhappiness about the services, either because the PHC did not provide medicines or the medicines supplied were ineffective. One of them, commenting on the malpractice of the PHC staff, said:

The PHC people will never provide us the medicine we require. They distribute only cheap medicines for cold and fever and ask us to buy costly medicines from the market.

Of the 20 male and 20 female informants, 6 male and 7 female informants were of the view that at the PHC the patients were not given proper attention. Many other villagers also shared this view. One of them observed,

Who is there in the PHC to listen to us? They will write a prescription, give some cheap pills and ask us to buy medicines from market. If there is no relief, they will write yet another prescription and ask us to buy the prescribed medicines again.

The most typical opinion about the PHC was best described by a milk vendor,

Why to go to the PHC just for having medicines worth 2 paise (i.e. Rs. 2/100) after spending Rs. 4 on rickshaw and wasting 2 to 3 hours? With the same or even lesser amount we can easily get good treatment from the village doctors. We don't have to waste our time also. Further, I think, the PHC doctor is not more experienced or efficient than our village doctors. Private doctors pay attention because they have to earn by satisfying the patients. In the PHC, as the doctor can't charge money, he does not pay any attention too.

Thus our observations clearly indicate that for common ailments, the people of Krishanpur primarily used the services of private village practitioners, who though not qualified, were able to treat most minor common ailments (dysentery, diarrhoea, malaria, coughs and colds, respiratory diseases, minor injuries, etc.) successfully. They generally used standard allopathic medicines. However, they were also frequently found to use or prescribe strong antibiotics which could become a matter of concern for the medical authorities. If the patient was not cured in a few days, or they felt that the disease was serious or in an advanced stage, they referred the case to a qualified doctor (mostly private) located in a nearby town or large village. In some cases they themselves went with the patients to give them moral support and to ensure that they got the proper treatment. It was generally observed that

they showed more concern and sympathy to patients than public doctors and thus were more successful in satisfying the patients and gaining their confidence. As regards the public health service, it was seldom utilised as it was seen to be costly and time-consuming. Further, the callous attitude of the doctors towards the patients, non-availability of medicines, etc. seems to have discredited the PHC and its sub-centres as a source of medical assistance.

It was found that for general ailments, women in Krishanpur had no objection to being examined or treated by a male doctor. However, in the case of gynaecological problems, a lady doctor was found to be very essential. As mentioned above, as no lady doctor was posted at the PHC clinic or sub-centre, the village women needed to go to the nearby city for treating their gynaecological problems, the nearest city being 20 kilometers away. Generally, these ailments were not attended to immediately both because the women felt shy to mention it to their husbands, and because the treatment was quite expensive entailing frequent visits to the city. If a problem became serious, they went to the hospital but full treatment was not always possible because of financial problems and other constraints. In such cases treatment was discontinued after one or two visits to the hospital and the village doctor was contacted.

One male informant who was a doctor confirmed that this was a very common occurrence and that the main reasons were poverty and inconvenience.

It may not be out of place to mention that we learnt from the village practitioners that more than 90 per cent of the women were suffering from leucorrhoea and were not getting proper treatment.

### *Access to MCH and other Preventive Care: Village Perspective*

This section discusses the preventive aspects of the health services and existing child-bearing and other health care practices.

What is the government health service doing about preventive care, especially for women in their child-bearing ages? On paper there are government programmes to provide iron and folic acid tablets to pregnant women. However, we never observed such services in Krishanpur, and none of the male and female informants were aware of this scheme. Indeed, most of our female main informants (16 out of 20) were not even aware of the existence of the health sub-centre in the village and the 4 who knew about the sub-centre were not sure about the services provided by it. The major reasons for such lack of information was (a) the centre was relatively newly established (about 6 months before our data was collected), and (b) the ANM responsible for running the clinic hardly visited it and hence it remained closed for weeks together.

None of the 20 female main informants reported that the ANM visited them for antenatal or postnatal advice to distribute vitamin or folic acid tablets or for family planning. Some of the women located close to the centre said:

We see a nurse going there but we don't know what it is all about.

Referring to the ANM, another low caste women who lived close to the sub-centre commented:

She thinks too much of herself. Once I called her for some advice but she paid no heed.

Discussions with the main female informants about prenatal care revealed that practically all of them were aware that nutritious food should be eaten during pregnancy. Traditionally, emphasis was given to the consumption of ghee (purified butter) during the last stage of pregnancy and immediately after the birth of the child. Yet, only 6 (all from relatively better-off families) of our 20 female informants, had consumed ghee during pregnancy. For most women, poverty did not permit such care. Nor was milk generally purchased for pregnant women. For example, only 7 of the 20 female informants, reported consumption of a small amount of milk during pregnancy, and again, they were all from better-off families who owned a milch animal.

It was also found that villagers lacked knowledge about certain food items which are cheap, easily available locally and known to be particularly good for pregnant women. For example, none of the 20 female informants were aware that leafy vegetables, which are inexpensive and readily available, can make up much of the nutritional requirements of women during pregnancy. Similarly, they believed that taking *arhar dal* (red gram) during pregnancy led to gas formation in the stomach. Thus women avoided it, depriving themselves of a high protein diet.

In Krishanpur, pregnancy was taken as a natural phenomenon which did not require any special attention unless there were complications. The majority of our female main informants (16 out of 20) were also not aware of preventive care during pregnancy and postnatal care of mothers and children, such as medical check-up, immunisation against tetanus, or taking vitamin and folic acid tablets. Thus, neither did they know much about preventive care nor did they have access to a good source of knowledge (e.g. ANM or other extension staff of the PHC). Those few who had some vague knowledge about the need for prenatal care, did not take it seriously as they did not consider these matters as 'essential'. Their perception about pregnancies and preventive care is best represented in the comment of Ruplata-one of our main informants belong to a high caste:

As such we don't take any special care during pregnancy or after. In rural areas, nobody



bothers about these matters unless there is some trouble or abnormality. I was never examined by any doctor during pregnancy nor went to the PHC for help.

Indeed our close observation as well as discussions showed that most women did strenuous work throughout pregnancy and sometimes they worked for 13 to 14 hours a day.<sup>7</sup> During our stay in the village, we observed 20 pregnant women, 18 of whom followed their usual activity pattern. It was not uncommon to find women in their 8th or 9th month of pregnancy carrying heavy loads of fodder on their heads. Thus, low and poor food intake and strenuous work, which is a common phenomenon in Krishanpur meant that most pregnant women were severely malnourished. Discussions with village doctors suggest that at least 90 per cent of the rural females are anaemic and that this condition is aggravated further during pregnancy.

Observations of child-bearing practices showed that almost all births took place at home and were assisted by dais (traditional birth attendants). The services of the ANM (a government employee) who was expected to visit pregnant mothers during her prenatal days and assist during deliveries were basically not available; she even refused cases at night whether or not they were serious. To assist a delivery she charged between Rs. 30-60 depending on the seriousness of the case although she was supposed to do this for free. For most of the villagers this was a big amount. Thus the deliveries were mostly performed by dais and/or by relatives/neighbours. The normal fee charged by the traditional dai was Rs. 5-10 (US-0.40-0.80) plus some grain. For poor families, this amount was further reduced to Rs. 2-3, plus some grain.

An analysis of the 79 deliveries which occurred in the 20 informant families revealed that only four had taken place in an institutional setting, and of the 75 home deliveries only four were assisted by an ANM.

During our discussions we found that all the male and female informants were aware that family planning methods could prevent unwanted pregnancies. Most informants also knew more than one modern contraceptive method. We also found that a number of couples not desiring additional children claimed that they used the safe period method for stopping child-bearing. However, all the 13 male informants who said that they knew the safe period method did not have correct knowledge about the method.

The above observations about the poor availability and accessibility of health and MCH care in Krishanpur is not an isolated case. Large-scale sample surveys have reported similar situations elsewhere. For example, as shown in Table 1, two recent studies covering five states of India (Gujarat, Rajasthan, Uttar Pradesh, Bihar and Kerala) showed that MCH services, except in the case of Kerala and to an extent Gujarat, reached relatively few pregnant women in their 8th or 9th month of pregnancy.<sup>8,9</sup> Similarly, in a separate study in



Uttar Pradesh, out of 778 sample women who got pregnant during the year preceding the survey(1982), only 10 per cent were checked by an ANM at home, only 10 per cent were given tetanus toxoid, only 8 per cent were approached and advised for family planning services, only 7 per cent received multi-vitamin and iron tablets, and only 4 per cent of the women were referred to primary health centres.

TABLE 1

Percentage of pregnant women availing of various MCH services

Services	States				
	Bihar	U.P	Rajasthan	Gujarat **	Kerala
Per cent checked at home	6	10	9	43	38
Per cent referred to PHC	NA	4	6	35	NA
Per cent given tetanus toxoid	11	10	11	37	38
Per cent given multivitamin and iron tablets	8	7	11	40	39
Per cent given nutritional supplements	5	—	NA	NA	12
Per cent receiving assistance in delivery at home	9	—	NA	NA	10
Per cent counselled on FP after delivery	3	8	11	40	26
No. of pregnant women interviewed	639	1800	1750	1800	638

Sources: See References 8(\*) and 9(\*\*)

Not all was dark, however, as there did seem to be an increase in awareness of the need for protecting mothers and newly-born children against tetanus. At least four male informants indicated that they had asked local practitioners to immunise their children and wives against tetanus - two for immunisation of the new born and the other two, for both the mother and child within 24 hours of delivery. These four informants were highly educated with 12 years or more of schooling. However, even they were not fully aware of the number of doses of ATS required to protect the mother and child from tetanus. In this context, the comment of one of our main male informants who was a school teacher and had 13 years of schooling is reproduced below:

My wife was given ATS when she delivered my eldest son. The second time, ATS could not be given and nothing happened to her. During the third and fourth deliveries, I did not attempt to give it to her at all.

A discussion with the village 'doctor' also showed that during the past five years, they had received requests for ATS. One village practitioner said:

Now people are becoming conscious about the danger of getting tetanus at the time of delivery. In the village, roughly in about 30 per cent of deliveries (two-thirds belonging to high caste and one-third low caste) ATS is given to the mother and the child within 24 hours.

The medical officer of the civil dispensary also observed:

As compared to the past, tetanus deaths during deliveries is now less. While protection against this disease during pregnancy is still taken by only a few families, several others have started taking ATS soon after delivery.

### **Summary and Conclusion**

The present paper reports a study of the accessibility and utilisation of health and family planning services in rural Uttar Pradesh - the most populated state of India. The methodological significance of the study lies in the approach it has adopted to get to the realities of the situation. Realising that no single approach, be it a sample survey or an anthropological study, can provide the complete picture, the present study integrates information generated through various approaches. It includes in-depth case studies and participant observations, along with statistics collected at the community and individual levels.

The study indicates that even though over time the health and family planning infrastructure in rural Uttar Pradesh has increased significantly, its accessibility to and utilisation by the rural masses have remained limited. The PHCs, sub-centres and dispensaries were found to be ill-equipped; supplies of medicines were far less than required; and to make the situation even worse, the staff of these clinics did not function properly, with late arrival or non-availability of doctors and other functionaries at the clinics being a common occurrence. Poor transport facilities further reduced the accessibility and utilisation of the primary health centres by the rural masses. In short, the credibility of government health services in rural Uttar Pradesh is fairly low. It is also less cost-effective, we believe, than the services provided by village health practitioners.

Village health practitioners, though unqualified, were found to be reasonably effective in treating common ailments. Their easy accessibility to rural people, their understanding of the cultural values shared by villagers and their personal touch in dealing with patients make them reasonably effective as well as acceptable. Thus, it seems that though public health services in rural Uttar Pradesh are not widely utilised, the treatment of common diseases can be taken care of by the largely unqualified village practitioners. These private village practitioners are not effective in the treatment

of serious or chronic diseases, provision of pre or post-natal care, protection of children against infectious diseases, and provision of family planning methods.

To increase the accessibility of these private services and the utilisation of existing public health facilities, it is crucial that the overall management (supervision, logistic support, etc.) of rural health services be improved. For this, an effective monitoring system is required. Increasing the supply of medicines is also very important, since shortages of medicines (particularly costly ones) often force doctors to prescribe medicines which have to be purchased by the patients. This causes the patient to believe that the doctor is corrupt and that he is selling medicines on the side. Though in some cases such a possibility cannot be ruled out, it is generally not true.

Even with improved management and increased supply of medicines, the lack of a proper transportation network in rural Uttar Pradesh will still continue to be a serious bottleneck in making public health services widely accessible. Thus, it is high time that alternative strategies are explored for extending health and family welfare services in rural India. One of the strategies could be to integrate village health practitioners in this endeavour. As we have seen, for most common ailments, health care is in any case generally provided by these practitioners. There is no reason to believe that the present situation is going to change. Furthermore, studies show that if people are educated about the necessity of immunisation, other MCH care and family planning, and if facilities for these services are easily available people will adopt them even if they have to pay for the services. Thus, the involvement of village practitioners in delivering health care could make a difference in the accessibility of these services to the rural masses. However, considering the fact that most village practitioners are not qualified, there is a need to develop short training courses. Such training could also help reduce the over-use of strong medicines such as antibiotics. How private practitioners could be integrated into the existing public health services and the amount of training they would require needs further development and testing on a pilot basis.

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## APPENDIX I

### PUBLIC HEALTH CARE USAGE

#### Community level

N.1 How many men, women, boys and girls visited this institution as patients (excluding family planning clients) within the last week/month from the village or urban area under study? What is the distance they came from and how did they come? When is this institution usually open (days of the week and hours for the various days)? What health personnel are usually available? When did any health personnel from this institution last visit the village or urban area under study? On what occasion?

N.7 In what ways can the health services of the PHC and PHC sub-centre be improved? What difficulties are experienced in imparting adequate health services to the people of this locality?

#### Individual level

D.5 Does the main informant and/or her husband know where the public health centre, public health sub-centre and hospital are located? How far do they think the public health centre and the public health sub-centre is from their home? How much time do they think it takes to reach there and by which mode of transportation?

D.6 When did the main informant or members of the household last visit the public health centre or sub-centre? Who? For what purpose? If there have been no visits, why not? Did any personnel in the PHC or sub-centre visit their home? Who? When was the last visit? For what purpose?

What is their knowledge and opinion about the service provided by the public health centre and sub-centre?

D.11 What type of maternal and child health (MCH) care did the main informant take during each pregnancy? Who helped her in getting these MCH services? Was she examined by the ANM during each pregnancy? Was she ever registered for MCH services at the PHC/sub-centre? If not, why not?

Does the main informant know what MCH services are available at the PHC and PHC sub-centres? Has the main informant used any of these services? What services? If not, why not?

D.12 Has any health personnel at any time advised the main informant or any other member of the household regarding: (a) immunisation, and (b) nutrition? What?

#### **WOMEN BEING EXAMINED BY MALE PHYSICIANS**

##### **Community level**

N.3 Do females feel shy or inhibited about being examined by male physicians? How many male/female doctors/nurses are there?

##### **Individual level**

D 4 Has the main informant or other female members of the family ever been examined or treated by a male doctor? Has the main informant or other female members of the family any objection to being examined or treated by a male doctor? Who? What objections? Was the main informant's mother ever examined or treated by a male doctor? What do the neighbours think about a female being examined by a male doctor?

# **STRATEGIES TO STEP UP RECALL INDUCTION IN THE UNIVERSAL IMMUNISATION PROGRAMME**

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## **Introduction**

The Universal Immunisation Programme (UIP) was launched in India to accelerate the immunisation coverage of infants and pregnant mothers. Aided by WHO and UNICEF, most of the set-backs observed under the Expanded Programme of Immunisation (EPI) such as logistics, cold chain management, costs, inadequate health infrastructure and lack of management skills, have been reduced in the UIP to ensure its smooth operation. The Government has also accorded priority to the programme by including it in its 20-point programme. However, reports of UIP studies <sup>2</sup> indicate that a large number of children remain partially immunised due to fear of reactions and lack of motivation among parents. With only a few years to 1990, the year of commitment for 100 per cent coverage of infants and pregnant women with the requisite vaccines, effective strategies are needed to improve the situation. This paper discusses three different approaches used for improving recall induction, so that complete courses of immunisation would be received by all the infants and mothers.

## **Sample and Methodology**

The M.L.N. Medical College, Allahabad, has been running the UIP since 1985. The 'camp mode' of dispensing vaccines against diphtheria, pertussis and tetanus (DPT), polio, BCG and measles to infants, and tetanus toxoid to mothers, by a team of medical and paramedical personnel on a specified date, at a specified place and time, was followed. Prior publicity and motivation of the people was done during the initial door-to-door survey and again on the day of vaccination. A 'camp' was set up amidst a population of one thousand, at any available site arranged by the people of the area.

Three different approaches were tried. According to the first, each area was visited once a month for three consecutive months to provide immunisation

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services to the beneficiaries. Anti-pyretic drugs and vaccination cards were given to each set of parents. A total population of 18,600 was covered by this approach. The second approach, modified to overcome the high drop-out rate for subsequent doses of DPT, polio, and tetanus toxoid, (observed by conducting a survey) was tried out in six homogeneous mohallahs drawn from each of two random samples of a list of non-vaccinated mohallahs. The modification involved the provision of the second dose on two, and the third dose on three consecutive days in the second and third months respectively, instead of on only one day designated for the purpose by the first approach. In addition, community leaders who showed an interest in the programme were identified at each camp site and asked to motivate the mothers to take the full course of vaccines, to allay fears and rumours about side effects and to act as a bridge between the providers and the beneficiaries.

The third approach was basically similar to the second, but included an additional motivational input by way of involving the local medical practitioners in each area irrespective of the system of medicine practiced by them, or their qualifications. These practitioners were informed about the programme and given UNICEF posters on immunisation to display, and paracetamol tablets to treat post-immunisation reactions, if any. About eight such practitioners who were identified, willingly offered their help especially in treating post-vaccination reactions.

## Results

The three strategies described above, were tried out one after the other to motivate people in order to achieve a better vaccination coverage of children and pregnant women. The results of the first approach which covered a population of 18,600 included a target group of 414 infants and 169 pregnant women, are shown in Table 1, Panel A.

Table 2 presents the reasons for the high drop out rate obtained by interviewing 322 parents/ guardians of children who had received incomplete immunisation or had not been immunised at all.

The main reasons expressed by the respondents were fear of side reactions (23 per cent), ignorance about the place and time (17 per cent), rumours (11 per cent), no knowledge about the need for the second and third doses (11 per cent), and illness of the child (11 per cent).

The results observed through the second approach, adopted after analysing the causes for none or incomplete immunisation, appear in Table 1, Panel B, while Panel C provides a summary of the results of the third approach. A comparison of Panels A, B and C indicates that the drop out rate between the first and third dose of the DPT vaccine, which was 77.5 per cent by the first approach dropped to 36.9 per cent by the second approach, and even

**TABLE 1**  
**Immunisation coverage by three different approaches**

Population	Total infants	Number of children immunised for									Number of pregnant women given tetanus toxoid		
		BCG		Measles		DPT		Polio					
		I	II	I	II	I	II	I	II	III	I	II	III
A. Approach I:													
18,600	414	304 (73.4)	214 (51.7)	285 (68.8)	92 (22.2)	64 (15.5)	271 (65.5)	122 (29.5)	78 (18.8)	31 (18.3)	17 (10.1)		
B. Approach II:													
7692	276	217 (78.6)	73 (26.4)	195 (70.6)	160 (58.0)	123 (44.6)	207 (75.0)	172 (62.3)	134 (48.5)	64 (90.1)	41 (57.7)		
C. Approach III:													
10,692	430	362 (84.2)	183 (42.6)	352 (81.7)	307 (71.4)	297 (64.9)	353 (82.1)	311 (72.3)	292 (68.0)	49 (71.0)	31 (44.9)		
Drop out rate (%)	DPT (doses)	Approach I    Approach II    Approach III											
		67.7    17.9    12.8											
Polio (doses)	Polio	1st to 2nd    2nd to 3rd    1st to 3rd											
		30.5    77.5    55.0    36.1    71.2    45.2											
Tetanus Toxoid (doses to pregnant women)	Tetanus Toxoid (doses to pregnant women)	1st to 2nd    2nd to 3rd    1st to 3rd											
		23.1    36.9    16.9    22.1    40.1    35.9											
		36.1											

Figures in brackets denote percentages.



TABLE 2

## Reasons for failure of immunisation

Reason	Number of respondents
A. <i>Lack of information about:</i>	
The need for 2nd and/or 3rd doses	35 (10.9)
Place and time of immunisation	55 (17.1)
Fear of side reactions	74 (23.0)
Misconceptions	23 ( 7.1)
B. <i>Lack of motivation:</i>	
Rumours	36 (11.2)
Carelessness	21 ( 6.5)
C. <i>Obstacles:</i>	
Parents busy	11 ( 3.4)
Illness of mother	31 ( 9.6)
Child ill/out	36 (11.2)

Figures in brackets denote percentages.

further, to 20.7 per cent by the third approach, when local practitioners were involved, The difference was statistically significant in both the cases ( $z=5.85$ ;  $P<0.001$  and  $z=4.10$ ;  $P<0.001$  respectively). Similarly for immunisation against polio, the drop out rate reduced from 71.2 to 40.1 per cent, and further to 17.3 per cent; the difference being significant again ( $z=7.2$ ;  $P<0.001$  and  $z=4.73$ ;  $P<0.001$  respectively). However, among pregnant women, though the drop out rate between the two doses of tetanus toxoid decreased from 45.2 to 35.9 per cent, the difference was not statistically significant ( $z = 0.9$ ;  $P>0.05$ ); and no change in drop out rates was visible between the second and third doses.

### Discussion

The implementation of the UIP in the city was taken up by our college in November 1985. Prior to this date, immunisation services under the EPI were provided only through hospitals, dispensaries and private clinics. However only the educated upper class had availed of these facilities and a majority of the population was unprotected. Bhargava and Sokhey<sup>3</sup> have also reported a poor vaccination coverage before the launching of the UIP. The 'camp' strategy was adopted, so as to catch the children along with

their parents at their doorstep, in an effort to accelerate the programme. However, the biggest draw-back of this strategy was the problem of drop outs as shown in Table 1. An assessment of the causes for failure (Table 2) indicated fear of reactions, illness of the child, lack of motivation and awareness as the major pitfalls, thereby indicating an obvious communication gap.

Evidence from programmes elsewhere have shown encouraging results by using improved communication strategies <sup>1</sup>. Therefore, efforts were made to fill this communication gap by mobilising motivated and enlightened community leaders as points of repeated contacts, for parents. These leaders acted as a source of information, helped to reinforce the knowledge already imparted by the survey worker and the health personnel, prevented rumours and formed a link between the team and the target group. Involvement of local medical practitioners helped reduce the drop out rate further (Table 1) because they fulfilled the need for medical help for post-vaccination reactions, after the team had left. Increasing the number of days for receiving the second and third doses also played a role in improving coverage by extending the time of availability of the service for the busy mother. This strategy has been tried out with success in Pakistan<sup>4</sup>. It is important to note that though community mobilisation produced a significant reduction in the drop out rates for DPT and polio immunisation, it produced only a slight drop; from 45.2 to 35.9 per cent in the case of tetanus toxoid.

If 100 per cent coverage of infants and pregnant women is to be achieved as envisaged by the Universal Immunisation Programme, it is essential that the strategies evolved for total coverage of infants be sustained, and that separate methods be adopted for the complete protection of pregnant women.

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# **THE REACH AND EFFECTIVENESS OF MEDIA USED FOR POPULARISING THE FAMILY PLANNING PROGRAMME**

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## **Introduction**

Communication studies conducted in India have largely investigated the knowledge content of family planning methods, its source, and the extent and nature of interspousal communication. In this context, a few studies merit attention.

A follow-up study<sup>1</sup> of 607 vasectomy acceptors conducted in rural Uttar Pradesh during 1968-71 revealed that the majority (50.7 per cent) of acceptors had come to know of vasectomy through friends and relatives, only 1.5 per cent through newspapers and exhibitions, and none through the radio and films. A study<sup>2</sup> conducted during 1972-74 in a few villages of Sharanpur district in Uttar Pradesh, found poor exposure of rural people to family planning messages through different media; 69 per cent of husbands and 90 per cent of wives stated that they had not received any family planning message through films, 82 per cent of husbands and 94 per cent of wives had not obtained it through booklets or leaflets, and 82 per cent of husbands and 98 per cent of wives had not learnt about it from the newspapers. Another rural study<sup>3</sup> which interviewed 394 males in Uttar Pradesh revealed a poor reach of the different media used for popularising family planning, in that more than half reported to have seen a wall painting or hoarding on family planning, 28 per cent had seen a film on the family planning theme, and the rest (21 per cent) had received the message through exhibitions or folk or cultural programmes.

These studies did not intensively investigate the socio-economic and demographic differentials in media exposure to family planning, and the effect of such exposure on attitudes towards family planning. An attempt has been made in the present paper to study the differentials in over-all exposure to family planning through different media according to major social, demographic and attitudinal characteristics of the respondents. It has also tried to determine the impact of media exposure in allaying fears, anxiety and apprehensions regarding birth control methods which may exist in the minds of potential acceptor couples.

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### Data and Methodology

The analysis relating to these issues has been based on the responses obtained by interviewing currently married males and females separately in selected rural and urban areas of Uttar Pradesh.

The study is part of a national study<sup>1</sup> conducted during 1980-81 in seven states of the country namely Gujarat, Orissa, Bihar, Uttar Pradesh, Maharashtra, Tamil Nadu and Karnataka. According to the survey design, 2000 currently married respondents (1000 males and 1000 females) were selected from each state following a multi-stage sampling procedure.

In Uttar Pradesh, four districts namely Farrukhabad, Varanasi, Lakhimpur Kheri and Lucknow were covered, and a total of 1600 interviews (800 males and 800 females) were conducted in selected rural areas of these districts. The urban sample of 400 (200 males and 200 females) was drawn from selected areas of Lucknow, the capital city; Lakhimpur, the district headquarters town, and Farrukhabad, another town. In the present paper, findings on these issues are presented separately for male and female respondents irrespective of their residence.

The reach of 12 different media of communication, through which people are exposed to family planning, was investigated. This included interpersonal, print and audiovisual media, namely home visits, group meetings, entertainment/cultural programmes (puppet shows, religious songs/recitals, folk drama etc.), radio, films, family planning posters, television, wall-paintings/hoardings, pamphlets/leaflets, exhibitions, newspapers, and magazines.

In order to study (1) the relationship between the over-all exposure of the respondents to family planning through different media, and their knowledge of the salient features of specific birth control methods, and (2) the socio-demographic differentials in over-all exposure to such media, a composite score; the *exposure score* was constructed for each respondent by giving equal weight\* (of 1) for each communication medium. Therefore, the maximum score a respondent could get was 12 and the minimum 0. The value of the scores thus, could range between 0-12. Following this pattern, a score value of 0 meant 'no exposure'; 1-2 meant 'low exposure'; 3-4 meant 'medium exposure', and 5 or more meant 'high exposure'.

\* In giving equal weight to each medium, the exposure of the respondent to home visits by the health worker, refers to such visits paid by the latter during the six-month period preceding the interview. The respondent's exposure to entertainment programmes refers to his/her participation in such a programme during the last one year from the date of interview.

## Results and Discussion

### *Reach of Communication Media:*

Of the 2000 respondents who were interviewed, 12.3 per cent stated to have been exposed to no media - the extent of 'no exposure' was comparatively higher among female (19.0 per cent) than male respondents (5.7 per cent). The mean exposure score worked out to be 3.3 for male respondents as compared to 2.3 for female respondents.

The level of exposure to family planning through inter-personal channels, i.e. home visits and group meetings by grassroots workers was found to be quite low, being just one per cent (0.3 and 1.8 per cent male and female respondents respectively). About 15 per cent reported to have received family planning information through both inter-personal and mass media channels (16.5 and 13.3 per cent male and female respondents respectively), while mass media alone conveyed such information to the majority - 77.5 and 65.9 per cent of the male and female respondents respectively. In other words, the family planning programme would do well if greater emphasis were placed on inter-personal channels because mass media channels in all likelihood, provide greater exposure in general terms and, by and large, lack the capacity to motivate people for actual acceptance of a family planning method.

The extent of exposure to the different media as studied indicated that 14.5 per cent of the male respondents and 13.7 per cent of the female respondents had been visited by a family planning worker during the last six months. With respect to group meetings, 6.7 per cent male and 3.5 per cent of the female respondents reported to have ever attended a group meeting on family planning. A variety of cultural programmes had been organised by the workers to popularise the programme, but had reached only 8.5 per cent of male and 3.0 per cent of female respondents during the last one year. Among print media such as pamphlets/leaflets, magazines, posters, and newspapers, the reach of family planning posters was maximum: 84.2 per cent of males and 61.2 per cent of females claimed to have seen a family planning poster. About 90.0 per cent of male and 61.4 per cent of female respondents also stated to have seen a wall painting/hoarding on family planning. Further, about 30 per cent of the males and 13 per cent of the females had received some information about family planning through newspapers.

With respect to major audio and audiovisual media like the radio, T.V., films and exhibitions, the analysis revealed that the radio had been playing an important role in disseminating information about family planning among the masses; 45.3 per cent of the males and 41.4 per cent of the females stated to have received such information through the radio, followed by 17.6 and 8.2 per cent respectively through films, 8.4 and 4.2 per cent respectively through exhibitions, and 1.4 and 2.7 per cent respectively through the T.V.

The reach profile of the media clearly reveals that the reach of static media like wall-paintings and posters was quite appreciable, but that of active media including inter-personal channels had made a far lower impact on the study population.

### *Exposure Differentials*

As indicated above, individual exposure scores were obtained by summing up specific media scores of equal weight (of 1) for example, if an individual had received information from exhibitions, films, posters and had been home visited by a worker, he obtained an exposure score of 4, and as per the 'class interval' would fall in the 'medium exposure' category. Variations in the exposure of communication media among the respondents were then studied according to their important socio-demographic characteristics.

*Age Composition:* Relating exposure scores with the age composition of the respondents indicated that the level of exposure was not associated with age (Table 1).

TABLE 1

#### *Age-wise differentials in media exposure levels*

Age in years	No exposure	Media Exposure Level			Total	Mean exposure score
		Low	Medium	High		
Male Respondents						
15-19		8(40.0)	11(55.0)	1( 5.0)	20(100.0)	2.8
20-24	8(5.0)	49(30.8)	58(36.5)	44(27.7)	159(100.0)	3.5
25-29	6(2.9)	67(32.5)	71(34.5)	62(30.1)	206(100.0)	3.6
30-34	7(3.9)	49(27.5)	75(42.1)	47(26.4)	178(100.0)	3.5
35-39	15(7.9)	65(34.4)	63(33.3)	46(24.3)	189(100.0)	3.3
40-44	21(8.5)	111(44.8)	78(31.4)	38(15.3)	248(100.0)	2.8
Total	57	349	356	238(15.3)	1000	3.3
Female Respondents						
15-19	17(25.8)	30(43.4)	11(16.7)	8(12.1)	60(100.0)	1.9
20-24	44(19.1)	97(42.2)	54(23.2)	35(15.2)	230(100.0)	2.2
25-29	36(14.4)	105(41.9)	65(25.9)	45(17.9)	251(100.0)	2.6
30-34	45(20.4)	87(39.4)	67(30.3)	28( 6.1)	321(100.0)	2.2
35-39	45(21.7)	83(40.1)	52(25.1)	27(13.1)	207(100.0)	2.2
40-44	3(12.0)	13(52.0)	6(24.0)	3(12.0)	25(100.0)	2.5
Total	190	415	255	140	1000	2.3

Figures in brackets denote percentages.

The mean exposure score was 2.8 for males aged 15-19 years as well as for those who were in the age group 40-44 years. Among female respondents the mean exposure score was 1.9 and 2.6 for the two groups respectively. But it is difficult to conclude that aged females had a higher level of exposure as the proportion of females with 'high exposure' was about 12 per cent both among wives aged 15-19 years and 40-44 years. The analysis suggests that younger men and women need to be covered more intensively through suitable media.

*Number of Living Children:* The analysis revealed that respondents with a larger number of children (5 or more) were comparatively less exposed to communication media as compared to those who had fewer children (1 or 2). Among male respondents with 1 to 3 living children, the mean exposure score varied between 3.2 to 3.3 as compared to 2.9 for those with 5 or more children. However, such a relationship between the number of surviving children and the exposure level was not observed among female respondents. The mean exposure score varied between 1.9 to 2.3 for females with 1 to 3 surviving children as against 2.3 for those having 5 or more children (Table 2).

TABLE 2

## Differentials in media exposure levels by total living children

Living children	No exposure	Media Exposure Level			Total	Mean exposure score
		Low	Medium	High		
<i>Male Respondents</i>						
None	12(7.5)	51(31.7)	58(36.0)	40(24.8)	161	3.0
1	6(3.7)	44(27.5)	63(39.4)	47(29.4)	160	3.2
2	8(4.6)	68(39.3)	53(30.7)	44(25.4)	173	3.3
3	5(2.9)	63(36.6)	71(41.3)	33(19.2)	172	3.3
4	8(5.2)	50(32.5)	53(34.4)	43(27.2)	154	3.5
5 or more	18(10.0)	73(40.6)	58(32.2)	31(17.2)	180	2.9
Total	57	349	356	238	1000	3.3
<i>Female Respondents</i>						
None	27(22.7)	54(45.3)	19(16.0)	19(16.0)	119	2.1
1	33(22.4)	68(46.3)	34(23.1)	12(8.2)	147	1.9
2	27(15.0)	67(37.2)	46(25.6)	40(22.2)	120	2.8
3	37(19.9)	72(38.7)	49(26.3)	28(15.1)	186	2.3
4	24(16.4)	59(40.4)	43(29.5)	20(13.7)	146	2.4
5 or more	42(18.9)	95(42.8)	64(28.8)	21(9.5)	222	2.3
Total	190	415	253	140	1000	2.3

**Religion:** The analysis of exposure score differentials according to religion revealed that the level of exposure to interpersonal and mass media communication was higher among Hindus as compared to Muslims. The mean exposure scores for males and females were 3.4 and 2.4 respectively among Hindus as against 2.7 and 1.7 respectively among Muslims (Table 3).

TABLE 3

Differentials in media exposure levels by religion

Religious status	No exposure	Media Exposure Level			Total	Mean exposure score
		Low	Medium	High		
<i>Male Respondents</i>						
Hindu	49(5.7)	283(32.9)	314(24.9)	214(24.9)	860	3.4
Muslims	8(6.3)	63(49.2)	41(32.0)	16(12.2)	128	2.7
Others	—	3(25.0)	1( 8.3)	8(66.7)	12	4.9
Total	57	359	356	238	1000	3.3
<i>Female Respondents</i>						
Hindu	159(18.5)	346(40.2)	222(25.8)	133(15.5)	860	2.4
Muslims	31(23.5)	67(50.8)	27(20.4)	7( 5.3)	132	1.7
Others		2(25.0)	6(75.0)		8	3.0
Total	190	415	255	140	1000	2.3

**Literacy and Education:** Literacy and educational levels of the respondents were found to be directly related to media exposure levels (Table 4). The mean exposure score was 1.9 and 1.5 among illiterate males and females respectively as compared to 4.4 and 4.8 for those male and female respondents respectively educated at least up to college level. The proportion of 'highly exposed' males and females varied between 3.2 and 3.5 per cent among illiterates as compared to 5.9 and 13.8 per cent among 'literate without schooling' and 53.6 and 67.2 per cent among those educated upto college standard or more. The proportion of those who were 'not exposed' to any media of communication was higher among the illiterate respondents as compared to those who were literate or educated.

**Family Size Attitudes:** Family size attitudes of the respondents were also found to be closely associated with the level of exposure. The mean exposure score varied between 3.3 to 3.9 among those males who preferred 2 to 3



TABLE 4

Differentials in media exposure level according to educational level

Educational level	No exposure	Media Exposure Level			Total	Mean' exposure score
		Low	Medium	High		
<i>Male Respondents</i>						
Illiterate, Literate without schooling	43(16.6)	143(55.2)	64(24.7)	9( 3.5)	259	1.9
Primary	6( 7.0)	44(51.8)	30(35.3)	5( 5.9)	85	2.5
Middle	4( 2.4)	73(44.2)	61(37.0)	27(16.4)	165	3.2
Matric	2( 1.4)	45(31.9)	54(38.3)	40(28.4)	141	3.6
College or more	1( 0.6)	24(14.6)	82(49.7)	58(35.1)	165	4.2
Total	57	349	356	238	1000	3.3
<i>Female Respondents</i>						
Illiterate, Literate without schooling	160(28.4)	285(50.5)	101(17.9)	18( 3.2)	564	1.5
Primary	5( 8.6)	28(48.3)	17(29.3)	8(13.8)	58	2.5
Middle	21(11.9)	66(37.3)	57(32.2)	33(18.6)	177	2.8
Matric	4( 4.8)	21(25.3)	39(47.0)	19(22.9)	83	3.4
College or more	—	8(14.1)	28(49.1)	21(36.8)	57	4.2
Total	—	7(11.5)	13(21.3)	41(67.2)	61	4.8
Total	190	415	255	140	1000	2.3

children as ideal, as against a score of 1.3 for those who considered 5 or more children as ideal. A similar association between family size attitudes and the mean exposure score was noticed among female respondents. The proportion of 'highly exposed' male and female respondents who considered 2 and 3 children as ideal varied between 13.5 and 31.4 per cent as against none to 1.6 per cent among such males and females who considered 5 or more children as ideal (Table 5).

Thus, the above analyses show that some of the important characteristics of the respondents such as their religion, educational status and attitudes towards ideal family size are closely related with their exposure to family planning messages through interpersonal and mass media channels.

TABLE 5

Differences in media exposure levels by family size attitudes

Ideal no. of children	No exposure	Media Exposure Level			Total	Mean exposure score
		Low	Medium	High		
<i>Male Respondents</i>						
1	—	—	—	1(100.0)	1	
2	( 3.3)	53(24.9)	86(40.4)	67( 31.4)	213	3.9
3	29( 4.3)	240(35.6)	245(36.4)	160( 23.7)	674	3.3
4	8(10.7)	36(48.0)	21(28.0)	10( 13.3)	75	2.5
5 or more	13(35.1)	20(54.1)	4(10.8)	—	37	1.3
Total	157( 5.7)	349(34.9)	356(35.6)	238( 23.8)	1000	3.3
<i>Female Respondents</i>						
1	1(11.1)	2(22.2)	4(44.5)	2(22.2)	9	
2	21(10.6)	68(34.4)	63(31.8)	46(23.2)	198	2.9
3	115(17.8)	270(41.7)	175(27.0)	87(13.5)	647	2.3
4	24(28.6)	47(55.9)	9(10.7)	4( 4.8)	84	1.3
5 or more	29(46.8)	28(45.2)	4( 6.4)	1( 1.6)	62	1.0
Total	190(19.0)	415(41.5)	255(25.5)	140(14.0)	1000	2.3

### Effectiveness of Media Exposure

Many couples resist birth control methods due to certain misconceptions, fears, anxiety and apprehensions about their use. Hence their views on certain commonly held misconceptions were ascertained and related with their exposure levels to understand the effectiveness of media exposure in removing such notions.

In India, particularly in the rural areas, couples largely believe that 'vasectomy causes loss of health'. This is a misconception and can adversely affect its acceptance. Such a perception could, to a great extent, be removed through effective media communication. The present analysis shows that respondents who were exposed to one or more media had more specific and correct knowledge regarding vasectomy. When male respondents were asked the question as to whether vasectomy causes loss of health, 68.9 per cent of those who were 'highly exposed' replied in the negative as compared to 12.3 per cent of those who were 'not exposed'. The mean exposure score of male and female respondents who said that vasectomy does not cause loss of health, was 4.0 and 3.2 respectively as compared to 2.9 and 2.0 for those

male and female respondents respectively who thought that vasectomy does not cause loss of health (Table 6, Panel A).

TABLE 6

Distribution of responses to questions on possible side effects of vasectomy by level of exposure

Media Exposure Level	Yes	No	Don't know	Total
<b>A. 'Do you think that vasectomy causes loss of health?'</b>				
<i>Male Respondents</i>				
No exposure	16(28.1)	7(12.3)	34(59.6)	57(100.0)
Low	168(48.1)	120(84.4)	61(17.5)	349(100.0)
Medium	132(37.1)	195(54.8)	29( 8.1)	356(100.0)
High	60(25.2)	164(68.9)	14( 5.9)	238(100.0)
Total	376	486	138	1000
Mean	2.9	4.0	2.0	3.3
<b>B Female Respondents</b>				
No exposure	144(75.8)	19(10.0)	27(14.2)	190(100.0)
Low	270(65.0)	87(21.0)	58(14.0)	415(100.0)
Medium	146(57.3)	82(32.1)	27(10.6)	255(100.0)
High	62(44.3)	65(46.4)	13( 9.3)	140(100.0)
Total	622	253	125	1000
Mean	2.0	3.2	2.0	2.3
<b>'Do you think that vasectomised men cannot do hard work?'</b>				
<i>Male Respondents</i>				
No exposure	16(28.1)	8(14.0)	33(57.9)	57(100.0)
Low	167(47.9)	123(35.2)	59(16.9)	349(100.0)
Medium	130(36.5)	195(54.8)	31( 8.7)	356(100.0)
High	67(28.2)	161(67.6)	10( 4.2)	238(100.0)
Total	380	387	133	1000
Mean	3.0	3.9	1.9	3.3
<i>Female Respondents</i>				
No exposure	138(72.6)	23(12.1)	29(15.3)	190(100.0)
Low	226(54.4)	105(25.3)	84(20.2)	415(100.0)
Medium	116(45.5)	102(40.0)	37(14.5)	255(100.0)
High	48(34.3)	72(51.4)	20(14.3)	140(100.0)
Total	520	302	170	1000
Mean	1.9	3.1	2.1	2.3

Figures in brackets denote percentages.

The selected couples were also asked a question regarding the ability of vasectomised men to do hard work. The survey findings reveal that the proportion of 'highly exposed' male and female respondents who stated that 'vasectomised men can do hard work' were 67.6 and 51.4 per cent respectively as compared to 14.0 and 12.1 per cent among those males and females respectively who were 'not exposed' to any of the media. The mean exposure score for male and female respondents who agreed that vasectomy does not affect the man's ability to do hard work were 3.9 and 1.9 respectively as opposed to 3.0 and 1.9 for those males and females respectively who did not agree with this view. (Table 6, Panel B).

Some commonly held misconceptions about tubectomy were also related with the media exposure level of the respondents. Among the respondents belonging to 'high exposure' category 63 per cent male and 55.7 per cent female respondents agreed that tubectomy does not result in loss of health as compared to 10.5 and 18.4 per cent of respondents with 'no exposure' to communication media. The mean exposure score was also higher for those males and females who had no such misconception about tubectomy (Table 7, Panel A).

A larger proportion of the respondents not exposed to any of the media were of the view that tubectomised women become fat following the operation. The proportion of those who believed that tubectomised women do not become fat was 69.3 and 43.6 per cent among the 'highly exposed' males and females respectively as compared to 12.3 and 11.3 per cent of those males and females respectively who were 'not exposed' to any of the media. Among female respondents, the mean exposure score was 3.2 for those who did not think that 'women become fat after tubectomy' as compared to the score of 2.1 for those who expressed the misconceived view that women do become fat (Table 7, Panel B).

The survey data further reveal that the proportion of respondents who expressed any fear, anxiety or apprehension regarding different family planning methods was higher among females as compared to males (Table 8). For example, with respect to tubectomy 73.1 per cent of the surveyed females had fears, anxiety or apprehensions as against 37.5 per cent of the males. Further, the mean exposure scores were 3.9 for males and 3.2 for females who had no fear, anxiety or apprehension regarding vasectomy as compared to 2.9 and 2.1 for such males and females respectively who expressed fear, anxiety or apprehension regarding the male operation. Similarly, the mean exposure scores for the respondents free from any fear of tubectomy, IUD and Nirodh etc. were higher as compared to the mean exposure scores for those who did express fears and anxieties about these methods.

TABLE 7

Distribution of responses to questions on the side effects of tubectomy by exposure levels

Media Exposure level	Yes	No	Don't know	Total
<b>A. 'Do you think that tubectomy results in loss of health?'</b>				
<i>Male Respondents</i>				
No Exposure	11(19.3)	6(10.5)	40(70.2)	57(100.0)
Low	120(34.4)	109(31.2)	120(34.4)	349(100.0)
Medium	83(23.3)	170(47.8)	103(28.9)	356(100.0)
High	50(21.0)	150(63.0)	38(16.0)	238(100.0)
Total	264	435	301	1000
Mean	3.0	4.0	2.6	3.3
<i>Female Respondents</i>				
No Exposure	134(70.5)	35(18.4)	21(11.1)	190(100.0)
Low	253(61.0)	114(27.5)	48(11.5)	415(100.0)
Medium	121(47.5)	109(42.7)	25( 9.8)	255(100.0)
High	58(41.4)	78(55.7)	4( 2.9)	140(100.0)
Total	566	336	98	1000
Mean	1.9	1.9	1.7	2.3
<b>B. 'Do you think that tubectomised women become fat?'</b>				
<i>Male Respondents</i>				
No Exposure	22(38.6)	7(12.3)	28(49.1)	57(100.0)
Low	183(52.4)	125(35.8)	41(11.7)	349(100.0)
Medium	153(43.0)	185(52.0)	18( 5.0)	356(100.0)
High	71(29.8)	165(69.3)	2( 0.8)	238(100.0)
Total	429	482	89	1000
Mean	2.9	3.9	1.6	3.3
<i>Female Respondents</i>				
No Exposure	159(83.7)	21(11.1)	10(5.2)	190(100.0)
Low	326(78.5)	78(18.8)	11(2.7)	415(100.0)
Medium	170(66.7)	82(32.7)	3(1.2)	255(100.0)
High	79(56.4)	61(43.6)	—	140(100.0)
Total	734	372	24	1000
Mean	2.1	3.2	1.0	2.3

Figures in brackets denote percentages.

**TABLE 8**  
**Fears, anxiety or apprehensions about family planning methods according to mean exposure level**

Method/ Respondents	Per cent expressing fears, anxiety or app- rehensions	Mean exposure score	Per cent free from any fear	Mean exposure score	Per cent no response	Mean exposure score
<i>Vasectomy</i>						
Male	42.9	2.9	48.2	3.9	8.9	1.6
Female	73.4	2.1	24.2	3.2	2.4	1.0
<i>Tubectomy</i>						
Male	37.5	2.6	47.2	3.9	15.1	2.1
Female	73.1	2.1	24.4	3.0	2.5	1.0
<i>IUD</i>						
Male	11.4	3.7	53.3	3.9	35.3	2.3
Female	52.9	2.3	29.0	3.0	18.1	1.2
<i>Nirodh</i>						
Male	6.2	3.6	77.0	3.6	16.8	1.8
Female	9.0	1.8	69.9	2.7	21.1	1.3
<i>Oral Pills</i>						
Male	5.0	4.3	33.6	4.2	61.4	2.7
Female	9.1	2.0	44.3	3.0	46.6	1.7

## Conclusions

The results presented above have shown that nine-tenths of the male and female respondents were exposed to one or more media of communication and a little above one-tenth had no media exposure whatsoever. The extent of 'no exposure' was comparatively more among females (19 per cent) as compared to males (5.7 per cent). The mean exposure score worked out to be 3.3 for males and 2.3 for females. The level of exposure to family planning through only interpersonal channels was found to be meagre. The mass media reached about three-fourths of the respondents.

The analysis further showed that the radio played an important role in disseminating family planning information in the survey areas. The reach profile of the media, by and large, indicated an appreciable reach of static media (such as wall-paintings and posters) as opposed to active media (including interpersonal) channels among the study population.

The findings also revealed that some of the salient characteristics of the

respondents such as religion and educational status and attitudes toward family size were closely related with their exposure level. The mean exposure scores for male and female respondents were 3.4 and 2.4 respectively among Hindus as against 2.7 and 1.7 respectively among Muslims; and were lower among illiterate males and females as compared to those who were educated. The mean exposure scores varied between 2.5 to 3.9 for males who preferred 1 to 3 children as ideal as against the score of 1.3 for those who considered 5 or more as ideal.

Media exposure seemed to help reduce misconceptions, fears and apprehensions regarding birth control methods. The mean exposure scores for both male and female respondents who were of the opinion that vasectomy does not affect health were 4.2 and 3.2 as compared to 2.9 and 2.0 respectively for those who expressed that vasectomy does cause health loss. Similarly, a larger proportion of the respondents who were not exposed to any of the selected media were of the view that tubectomised women gain weight, than those who were exposed to one or more media. The level of exposure to media also seemed to help reduce fears, anxieties and apprehensions relating to birth control methods.

The findings suggest that intensive efforts should be made to increase the media exposure level of females, couples belonging to the Muslim community and those who are illiterate and less educated. The study also indicates that such sections of the population who have profertility values should be identified and intensively exposed to interpersonal counselling and mass media to bring about the required attitudinal change. It specifically suggests that the increase in the exposure level of couples to family planning information through a balanced mix of media channels would be highly fruitful in reducing existing fears, anxiety, misconceptions and apprehensions about different birth control methods.

# **PSYCHIATRIC ASPECTS OF FEMALE STERILISATION**

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## **Introduction**

Female sterilisation occupies a major place among the various family planning procedures currently in use in India. Retrospective reports in literature have suggested that the procedure may be followed by both physical and psychological ill-health and general dissatisfaction.<sup>1,2</sup> The most commonly reported psychological disturbances following tubectomy are anxiety, depression, hysterical fits and psychoneurosis which occur in 15 to 30 per cent of the cases.<sup>2,5</sup> Attempts have also been made to present profiles of those women unlikely to do well after the procedure, but few are in agreement.<sup>6</sup> The results have been further confounded by grouping together women opting for the procedure during the puerperium<sup>7</sup> or together with a termination of pregnancy.<sup>8</sup> Standardised, reproducible data were rarely obtained.

The present study was conducted with the aim of assessing the mental health of an unselected sample of women at the time of referral for sterilisation, after the procedure and subsequently after three and six months.

## **Sample and Methodology**

Three hundred consecutive cases undergoing tubal ligation at Smt. Sucheta Kriplani Hospital, New Delhi were taken up for the present study. The respondents were interviewed before and after undergoing the procedure and subsequently after three and six months. The interview included the recording of the client's identification data, menstrual history (the presence of any menstrual disorder), degree of social adjustment (which was judged from two perspectives i.e. sexual relationship and social activity or interpersonal relationships), and occupational adjustment (ability to do household and/or office work). The presence of different psychological variables was identified by interviewing the patient and a close relative (Appendix I). The pa-

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tients were administered a health questionnaire<sup>9</sup> N-2 (Appendix II) to assess the degree of neuroticism, if any. Those who scored more than 9 (score 9 was taken as a cut-off point), were taken up for detailed psychiatric evaluation to determine the type of neurosis.

## Results

The mean age of the respondents who underwent tubal ligation was  $30.6 \pm 5.2$ , with a range of 21-44 years. Almost three-fourths of them were housewives, and illiterate or educated up to the primary level. The average monthly income of their husbands was Rs. 500 or less. About 88 per cent were Hindu, 10 per cent Sikh and 2 per cent belonged to other religions. The mean parity of the sample was  $3.43 \pm 1.46$  with a range of 1-8, and they had, on average, 2.52 male children. The mean age at marriage was  $16 \pm 3.51$  years. As stated by the respondents, the majority had come to know about the terminal family planning procedure through relatives or friends.

The degree of neuroticism and its progress with time is shown in Table 1.

TABLE 1

Distribution of respondents by scores on the N-2 neuroticism scale(N = 300)

	9	9	p-value
Before tubal ligation	189(63)*	111(37)	
After tubal ligation	195(65)	105(35)	$p > 0.05$
3 months after ligation	240(80)	60(20)	$p < 0.001$
6 months after ligation	276(92)	24(8)	$p < 0.001$

\* Figures in brackets indicate percentages.

The results indicate that whereas 37 per cent of the respondents showed high scores for neuroticism (scores more than 9 on the N-2 scale) before undergoing tubal ligation, and no significant change was evident immediately after the procedure, significant improvement in the degree of neuroticism was seen three and six months post-operation ( $P < 0.001$ ).

A distribution of the high scoring respondents based on their psychiatric diagnosis is presented in Table 2.

Anxiety neurosis was found to be the commonest condition followed by hypochondriasis and depression. All the respondents showed a decline in their neurotic condition with the passage of time, with highly significant improvements three and six months after tubal ligation ( $p < 0.001$ ).

TABLE 2

Distribution of respondents with high neuroticism scores by nature of symptoms

Symptoms	Before tubectomy	After tubectomy	3 months post- tubectomy	6 months post- tubectomy
Anxiety neurosis	57 (19)*	48 (16)	30 (10)	12 (4)
Depressive neurosis	18 (6)	18 (6)	9 (3)	3 (1)
Multiple somatic (hypochondriasis)	36 (12)	39 (13)	21 (7)	9 (3)

\*Figures in brackets indicate percentages.

The presence of menstrual symptoms and changes, if any, in sexual satisfaction, and social and occupational adjustment, three and six months after the operation are presented in Table 3.

TABLE 3

Menstrual symptoms, and sexual, social and occupational adjustment, 3 and 6 months following tubectomy (N = 300)

	3 months post-tubectomy (%)	6 months post-tubectomy (%)
<i>Menstrual symptoms:</i>		
Menorrhagia	7.3	6.4
Dysmenorrhoea	5.3	4.0
Dysfunctional uterine bleeding	4.4	2.0
Epimenorrhoea	2.3	0.3
Amenorrhoea	0.7	0.3
No complaint	80.0	87.0
<i>Sexual satisfaction:</i>		
Better	34.0	36.0
Worse	6.0	8.0
Unchanged	60.0	56.0
<i>Social adjustment:</i>		
Better	8.0	18.0
Worse	12.0	4.0
Unchanged	80.0	78.0
<i>Occupational adjustment:</i>		
Better	10.0	21.0
Worse	15.0	5.0
Unchanged	75.0	74.0

The results indicate that complaints of menstrual symptoms expressed by 20 per cent of the respondents three months after the operation, were reduced six months post-operatively to 13 per cent. Further, the majority of the respondents stated that their sexual relationship was either unchanged or had improved after having undergone the sterilisation operation. They also expressed no change or better adjustments in their social and occupational lives.

The presence of various psychological variables is shown in Table 4 (Appendix I).

TABLE 4

Type of psychological variables (N = 300)

Variable	Before operation	Immediately after operation	3 months post-operation	6 months post-operation
Fear	240(80.0)*	48(16.0)	12 (4.0)	6 (2.0)
Upset	18 (6.0)	15 (5.0)	3 (1.0)	—
Wrong	12 (4.0)	27 (9.0)	6 (2.0)	6 (2.0)
Irritability	30(10.0)	12 (4.0)	—	—
Regret	—	60(20.0)	42(14.0)	12 (4.0)
Relief	—	138(46.0)	237(79.0)	276(92.0)

\* Figures in brackets denote percentages.

While the majority of respondents (80 per cent) expressed fear before undergoing the procedure, around 92 per cent stated that they felt a sense of relief six months after the procedure. The number of patients who regretted having undergone the operation also declined with the passage of time to 4 per cent, six months after the procedure.

## Discussion

The degree of neuroticism was found to be higher before the procedure but decreased gradually with the passage of time. Of the 300 clients who underwent tubal ligation, 37 per cent were identified as psychiatric cases using the N-2 scale at the time of tubal ligation. This is comparable to some earlier studies<sup>2,3,5 10-12</sup>, while others have found the prevalence of psychological problems either very low<sup>4,13-15</sup> or very high.<sup>3</sup>

Detailed psychiatric evaluation of respondents with high scores for neuroticism, showed anxiety neurosis to be most prevalent, followed by hypochondriasis and depression. All these conditions declined with the passage of time and six months after the operation, only 4 per cent had anxiety, 3

per cent had multiple somatic complaints, and depression was noticed in 1 per cent of the cases. These results are comparable to the observations of Wig et al<sup>5</sup> who found anxiety neurosis in 4.2 per cent of the cases, multiple somatic complaints in 3.5 per cent while 2.7 per cent reported depression 18 months after tubectomy. Smith,<sup>12</sup> however, found depressive followed by dysmenorrhoea, dysfunctional uterine bleeding, epimenorrhoea and amenorrhoea.

The number of patients who complained of menstrual symptoms were 20 per cent at three months, and decreased to 13 per cent six months post-operation. This is comparable with other studies which report menstrual symptoms in 19 to 82 per cent of tubectomy acceptors.<sup>3,5,10 13-15</sup> Similar to the observations of Wig et al,<sup>5</sup> menorrhagia was the commonest symptom followed by dysmenorrhoea, dysfunctional uterine bleeding, epimenorrhoea and amenorrhoea.

Sexual satisfaction was reported to be unchanged or better three months post-operation by almost all the respondents (94 per cent). Only 6 per cent complained of decreased enjoyment or frequency; this figure increased to 8 per cent six months after the operation. These results are comparable to those obtained by other workers which report decreased libido or frequency of coitus in 0.5 to 59 per cent of the cases.<sup>2 5,12 13,15,16</sup>

Respondents who complained of social and occupational maladjustments three months after tubal ligation were 12 and 15 per cent respectively of the total, and decreased to 4 to 5 per cent six months after the operation. This finding is consistent with that of Greer<sup>17</sup> and Ashton.<sup>18</sup>

Table 4 shows that 30 per cent of the respondents expressed fear that the procedure would cause some harm, either psychologically or physically. This decreased to 16 per cent immediately after the procedure ( $p < 0.001$ ) and only 2 per cent continued to harbour this feeling six months later. The number of cases who regretted having undergone the operation soon after it was performed was 60 (20 per cent), and reduced to 12 (4 per cent) six months later. Panigua et al<sup>12</sup> and Smith<sup>19</sup> also observed that the number of women who expressed a sense of relief after tubal ligation showed a continuous rise with time (92 per cent after 6 months).

In summary, therefore, the study indicated that anxiety neurosis, menstrual symptoms, social and occupational maladjustments, fear of harmful side-effects or loss of libido after tubal ligation which were found in a small proportion of the acceptors declined with the passage of time—six months—to negligibly low levels.

### Summary

Three hundred cases of tubal ligation were studied preoperatively and subsequently followed up for a period of three months and six months after the operation by a combined psychiatric and gynaecological team. The mean age of the respondents was 30.6 years, the majority were illiterate housewives from the low-income group. Their mean parity was 3.43. On pre-operative assessment, 37 per cent exhibited psychological symptoms, anxiety neurosis being most prevalent. The symptoms at the three follow up visits reduced appreciably, and were 35 per cent, 20 per cent and 8 per cent, respectively. About 20 per cent complained of menstrual symptoms at three months, which decreased to 13 per cent at six months post-operation. The majority experienced improvement or no change in sexual, social and occupational adjustments following sterilisation. Twenty per cent regretted the operation immediately after it was performed, but only 4 per cent did so six months later.

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## APPENDIX I

### PSYCHOLOGICAL VARIABLES

**Fear:** When the respondent expresses a feeling of being afraid that the procedure would cause her some harm, either psychologically or physically

**Upset:** When the respondent is not feeling as well psychologically as she had expected to feel after the procedure.

**Irritability.** If there is evidence (either objectively on interviewing or reported by a close relative) that the respondent is in a state in which she is capable of being annoyed by trifling matters.

**Wrong:** If the respondent expresses the feeling that she should not have undergone the procedure since it was not right.

**Regret:** If there is evidence (either objectively on interviewing or reported by a close relative) of an unpleasant feeling together with the feeling that it would have been better if the procedure had not been performed.

**Relief:** When the respondent feels that she is satisfied with the procedure.

## APPENDIX II

The PGI Health Questionnaire, N-2, is a simple neuroticism scale in Hindi consisting of 60 items (50 items measuring the degree of neuroticism and 10 items measuring lie scores), constructed and standardised by the Psychiatry Department of the Institute.<sup>9</sup> The scale has been shown to have high reliability and validity.

If a patient scores more than 3 out of the total of 10 lie items, he/she has to be eliminated from the study. Out of 50 items measuring the degree of neuroticism, if a patient scores more than 9, he/she is considered to be having a significant degree of neuroticism (score 9, after standardisation, was taken as a cut-off point), which needs further detailed interviewing to determine the type of neurosis.

# **AGE AND SEX COMPOSITION OF A SLUM POPULATION OF DELHI**

**DR. KANAN K. SADHU +**

## **Introduction**

Age and sex are the primary variables which are necessary for almost all classifications related to population characteristics<sup>1</sup>. Till 1921, the approximate average annual growth rate of the Indian population was 0.6 per cent. By 1971, it had increased to 2.2 per cent. Mukherjee<sup>2</sup> has observed that a nearly static age structure has co-existed with this vast growth in population size. This phenomenon has important implications from the point of view of future increases in population and economic development.

The age and sex composition gives an idea of the general population structure. It indicates the number of individuals and the proportion of females in the reproductive age groups. The age and sex composition of a population at any given time is the result of past trends in fertility, mortality and migration. It, in turn, influences the current levels of fertility and mortality as also the rate of future growth of population, since births, deaths and migration occur with unequal frequencies at different ages.

The growth of slums in the metropolis is a manifestation of urban poverty. According to an estimation made by a Planning Commission Working Group, as given by Rao<sup>3</sup>, around 22 million of the total 108 million urban people of India were living in slums in the early seventies. In Delhi, an estimated 73.7 per cent of the city's population of 4.5 million lived in slums or in near slum conditions.

The present study is part of a larger demographic study being conducted by the author among the slum dwellers of Delhi. The population under study is largely a migrant population from the distant villages of Bihar, Uttar Pradesh, Madhya Pradesh and Rajasthan, which migrated to Delhi in search of work of varied types. These people have constructed their 'kuccha' or 'pucca' huts in clusters on vacant Municipal land; the surroundings are unhygienic with hardly any civic amenities. The unhygienic situation is further compounded by the filth, mud and stagnant puddles of water that breed flies, mosquitoes and other germs. It is in these conditions that the people live, procreate and grow in numbers.

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### Sample and Methodology

The population sample under study comprised 789 slum dwellers from 120 households. Data was collected by conducting a door-to-door survey using an open-ended questionnaire. The interview method was also heavily relied upon, and involved indirect and non-formal conversations not only with the primary informants but also with other members of the household.

### Results and Discussion

*Sex composition*: The sex composition gives a comparative picture of the numerical dominance of one sex over the other. In this study, the sex ratio is expressed as the total number of females divided by the total number of males, and multiplied by 1000. Since the sex ratio varies with age, due to differential mortality of the two sexes, the total sex ratio of a population is among many other factors, a function of age distribution of the population<sup>4</sup>.

In the slum population studied there were 388 females to 401 males giving a sex ratio of 968 (Table 1). This compares well with the sex ratio of the Indian population as a whole which is 935 according to the 1981 census.

TABLE 1  
Agewise sex ratio of the slum population

Age group (in years)	Males	Females	Sex Ratio
0-4	68	65	956
5-9	56	47	839
10-14	54	56	1037
15-19	42	40	952
20-24	48	63	1312
25-29	34	25	735
30-34	26	23	885
35-39	18	14	778
40-44	14	13	929
45-49	12	11	917
50-54	12	16	1333
55-59	6	7	1167
60+	11	8	727
Total	401	388	968

According to the universal experiences as given by Mckusick<sup>5</sup>, the



surplus of males at birth is progressively diminished due to the high mortality rate among males at every age level, until during a certain period the sex ratio is 1000 and after this, the proportion of males goes on decreasing as compared to the number of females.

In the population under study there was a preponderance of males over females right from birth till the age of 50 with two exceptions viz. the age groups 10-14 and 20-24 years when the sex ratio ~~exceeded~~ 1000 (Table 1).

When, however, broader age groups of 0-14 years (pre-fertile), 15-49 years (fertile) and 50+ years (post-fertile) were analysed, it was found that the number of males had been decreasing as indicated by sex ratios of 944, 974 and 1069, for the three age groups, respectively. This shows that here again the universal pattern, as cited above, is followed. However, the higher sex ratio among the age-groups 10-14 years and 20-24 years also does not seem to be without reason. As soon as the sons of the slum dwellers reach the age of 10-14 years, they learn some semi-skilled work like machine operation, tailoring etc. or take up unskilled chores such as fruit and vegetable vending which necessitates their further migration to other places. Similarly, at the age of 20-24 years they bring along their newly-wedded brides after 'gauna'; this increases the female population and results in an increase in the sex ratio.

While the higher sex ratio among these two age groups may not be of much significance by itself, in view of the lower overall sex ratio upto the age of 50 years, the higher sex ratios for the 50+ age groups are very significant, and are indicative of higher male mortality, which is also the universal experience. It is seen that in the population under study, the sex ratio is very high in the 50-54 and 55-59 age groups. The 60+ age group, however, does show a decline in sex ratio as it suddenly drops to 727. This could be due to reverse migration whereby aged womenfolk not being able to earn their livelihood in the city due to old age, return to their native village to spend the rest of their life among their own kinsmen.

*Age Composition:* Age distribution of a population implies the number of persons at each age rather than the age of the population. But age recording is much more complicated, due to illiteracy as well as a deliberate attempt to conceal one's age. To minimise these errors, the data was classified into five-year categories.

Table 2 shows that the 0-4 year age group constituted the largest population group (16.86 per cent). This characteristic is in accordance with the universal experience according to which the 0-4 age group has been found to comprise the maximum proportion of any population, because it represents the nearest group to the original stock which, compared to other groups, has

been exposed to the minimum risk of death <sup>5</sup>.

**TABLE 2**  
**Age distribution of the slum population**

Age group (in years)	Males	Females	Total
0-4	68 (17.0)	65 (16.7)	133 (16.9)
5-9	56 (14.0)	47 (12.1)	103 (13.1)
10-14	54 (13.5)	56 (14.4)	110 (13.9)
15-19	42 (10.5)	40 (10.3)	82 (10.4)
20-24	48 (12.0)	63 (16.2)	111 (14.1)
25-29	34 ( 8.5)	25 ( 6.4)	59 ( 7.5)
30-34	26 ( 6.5)	23 ( 5.9)	49 ( 6.2)
35-39	18 ( 4.5)	14 ( 3.6)	32 ( 4.1)
40-44	14 ( 3.5)	13 ( 3.4)	27 ( 3.4)
45-49	12 ( 3.0)	11 ( 2.8)	23 ( 2.9)
50-54	12 ( 3.0)	16 ( 4.1)	28 ( 3.6)
55-59	6 ( 1.5)	7 ( 1.0)	13 ( 1.7)
60+	11 ( 2.5)	8 ( 2.0)	19 ( 2.4)
Total	401 (100.0)	388 (100.0)	789 (100.0)

Figures in brackets denote percentages

In the study population, the young age population, upto age groups 20-24, was represented in greater proportion. In fact, half the population was below the age of 15-19 years and 75 per cent was under 29 years of age. The older age groups were represented in much lower numbers - a characteristic of migrant populations.

Mukherjee<sup>6</sup> has observed that while people of all sexes and ages can and do migrate, in many societies including the developing ones, the incidence of migration is particularly high among men of early working ages and women around the age of marriage or the birth of the first or second child. This is borne out by the present study as evident from Table 2.

The slum population under study had a higher ratio of both men and women upto the ages of 20-24 years because at these ages they primarily migrate in search of work and livelihood. They are the main source of labour for construction of roads and buildings, in factories, etc. This age group of 20-40 years is very significant for females, as it is the age at which most of them start raising their families and it is, therefore, at this age that the influence of their migration is apparent. The percentage of female popula-

tion in this age group was 16.2 as against only 12 in the case of males.

There was a sudden drop in the percentage of females in the age groups of 25-29 years upto 35-39 years. This could be due to a high maternal mortality rate. According to Shrivastava<sup>6</sup>, it is the poor health of mothers, due to malnutrition and repeated childbirth, which leads to higher female mortality rates among middle-aged women. In this population this effect was evident in 25-30 age group.

### Conclusion

It is clear from the above study that the population structure of slum dwellers is greatly influenced by migration -- one of the important demographic factors. Sex ratio and age composition provide important data for planning measures for their rehabilitation, provision of civic amenities and health facilities, and gainful employment.

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# **REPRODUCTION AMONG THE RURAL POOR IN UTTAR PRADESH: A SOCIO-PSYCHOLOGICAL STUDY**

**DR. A.K. SHARMA +**

## ***Introduction***

Most research on the sociology of reproduction has shown a negative correlation between income and fertility, and that the poor have a higher fertility than the non-poor. This high fertility among the poor has been attributed either to their ignorance and high mortality syndrome, or to functions of high fertility, which are supposed to outweigh its cost.<sup>1</sup> In the past, the poor lived in a more or less closed and need-based economy. Their requirements and perceptions were connected largely with survival and tradition, and the traditional nature of their institutions including family and kinship, probably served their interest best. This dependence on traditional institutions increased further during the colonial period in which their condition was proletarianised and marginalised.

Today, society has entered into a new cycle of development after independence. In this phase, the questions which arise are: (a) What are the attitudes of the poor towards reproduction?; (b) What are the poor likely to do to conform to their norms?; (c) What are the implications of (a) and (b) for their development? The present paper concentrates on some aspects of these questions. It attempts to explore some socio-psychological aspects of reproductive behaviour of the rural poor. In particular, it deals with attitudes regarding reproduction and family planning, and attempts to analyse whether their attitudes and behaviour are conducive to family planning acceptance or not, and the social constraints under which they take decisions impinging upon their life, using both quantitative and qualitative information.

## **Sample Design and Sources of Data**

Literature and early field trips had shown us that the biography of the respondents may affect their construction of social reality, and that the level of development of the whole village collectively, also affects this considerably. It was clear that the census is a better device than sampling for eliciting a reliable response from the villagers who do not understand the technicalities of the research process and whom it may be difficult to convince why only

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they and not others also are being contacted. Their own understanding of this question may bias their responses and yield a distorted picture of social reality.

Considering this and the resources of the project, it was decided that about 550 respondents—500 poor and 50 non-poor—in selected developing and developed villages of Uttar Pradesh state, drawn on the quota sampling basis, be surveyed. In the case of the former, targets were fixed for the various socio-economic groups in villages, e.g. landless labourers, small and marginal farmers, and others below the poverty line, belonging to the general category as well as to the scheduled castes and scheduled tribes, and the villages were selected in a manner which exhibited these characteristics. Similarly, in case of the non-poor, quotas were fixed for landlords, servicemen, men in trade and commerce, and others belonging to the general category as well as scheduled castes and scheduled tribes. It was decided that normally, one working male per household, aged 20 years and above, preferably in the age group 20-50 years, should be selected.

Thus, data were collected from eight villages of Kanpur and Varanasi districts of which four were developed and four were underdeveloped. The development status of the villages was fixed by the author himself on the basis of socio-economic conditions and infrastructural facilities. However, the selection was purposive. Investigators who were appointed to work in the project had some familiarity with the study areas and this fact was also given consideration at the time of selection of districts and villages. The number of respondents contacted was 585—506 poor and 79 non-poor. The present paper is based on the analysis of data obtained from the poor.

While quantitative data were obtained by administering a structured interview schedule, qualitative data were obtained by informal interviews of some non-poor villagers, development workers and officials at the block and the village levels, beneficiaries of development programmes, and other representatives of the selected villages. A few guided group discussions were organised and their reports were prepared. Case studies were conducted, and an ethnographic approach was applied.<sup>2</sup>

### **The Definition of Poor**

Poverty is a relative phenomenon. In relation to affluent countries, India is poorer. In relation to an Indian metropolis, the towns are poorer, and in relation to urban India in general, the whole rural population is poorer. As soon as one crosses the urban boundaries one enters into the vast ocean of rural poverty. At first glance, it seems ridiculous to conceive of villages as consisting of two distinct groups—poor and non-poor. The entire village population seems to be lacking in the amenities which its urban counterpart

enjoys. However, villages have their own social structure, and their own social stratification: a village is a sample of India in all its social complexities. There are affluent sections which control land (the most crucial factor in the means of production) and the poor who constitute the potential source of labour power.

In this study, the poor have been selected on two grounds. First, they should be objectively poor—they should be earning less than Rs. 550/- per month (per adult male earner), and if they have agricultural land, it should be less than two acres. Secondly, they should subjectively identify with the poor. The investigators were therefore asked to prepare a list of all the poor in a village on objective grounds, and delete in the final survey all those who think they are not poor. Since the purpose was not to quantify poverty but to know the conditions of the poor, we ensured that the poor are really poor both on objective and subjective grounds.

Later in the survey, we asked them: 'How is your living condition as compared to others in your village?' Their response is shown in Table 1.

TABLE 1

## Relative condition of the poor

Condition of the villages	Developed villages	Less developed villages	Total
Very good	4( 1.5)	—	4( 0.8)
Good	36(13.4)	27(11.3)	63(12.5)
Average-neither good nor bad	104(38.8)	87( 6.6)	191(37.8)
Bad	91(34.0)	108(45.4)	199(39.3)
Very bad	26( 9.7)	16( 6.7)	42( 8.3)
No response	7( 2.6)	—	7( 1.4)
Total	268(100.0)	238(100.0)	506(100.0)

Figures in brackets denote percentages.

Table 1 shows that the majority of respondents stated that their relative condition was average or bad; only 13.2 per cent felt it was good or very good. It is possible that these two categories of respondents have different reference groups - while the former compare themselves with the better-off strata in the village, the latter compare themselves with the poor.

## Results and Discussion

Table 2 summarises the data on the socio-economic characteristics of the respondents (poor) included in this study.

TABLE 2

## Characteristics of the respondents

Characteristics	Developed villages	Less developed villages	Total
Average age (years)	36.0	33.7	34.9
Per cent Brahmins and peasant castes	33.2	36.6	34.8
Married (%)	86.2	82.4	84.4
Literate (%)	62.3	74.8	68.2
Cultivators (%)	34.3	45.4	39.5
Landless (%)	38.1	31.5	35.0
Workers with work for less than 6 months in the last year (%)	33.6	42.0	37.6
Proportion living in Kaccha houses (%)	74.6	84.5	79.6
Median income (in Rs.)	300	312	305

Unlike the other two demographic processes—migration and mortality—high fertility has had a deep attitudinal sub-stratum in the past. Therefore, a change in the level of fertility requires a change in the non-material culture which supports high fertility. In other words, actual fertility transition will occur only after attitudes have changed. Thus, changes in attitudes may also be viewed as the first indication of the onset of demographic transition. Table 3 presents data on ideal family size as reported by the respondents.

Table 3 shows that among the rural poor the concept of ideal family size was quite conducive to the acceptance of family planning. The majority of the respondents thought that 2-3 is the ideal family size; few expressed the desire to have an ideal family of 5 or more children. However, the findings need to be interpreted with care.

In the rural Indian context, the total perceived utility of a son is greater than that of a daughter. In relation to sex preference, the majority were weighted heavily in favour of sons. If this composition is not achieved (in their ideal family size), many would continue to try to fulfill their desire for a particular number of sons (or daughters). This is one reason why the desired family size, that is, the actual number of children ever born plus additional children desired is higher than the ideal family size. Moreover, infant and child mortality among the rural poor is still high. Many of the children who do not survive are likely to be replaced. This further widens the gap bet-

TABLE 3

Distribution of respondents by their idea of ideal family size and composition

Ideal family size (children)			Developed villages	Less developed villages	Total
Total	Sons	Daughters			
0	0	0	3( 1.1)	1( 0.4)	4( 0.8)
1	1	0	3( 1.1)	4( 1.7)	7( 1.4)
1	irrespective of sex		1( 0.4 )	—	1( 0.2)
2	1	1	57(21.3)	55(23.1)	112(22.1)
2	2	0	7( 2.6)	3( 1.3)	10( 2.0)
2	sex composition not mentioned		1( 0.4)	—	1( 0.2)
3	2	1	121(45.2)	132(55.5)	253(50.0)
3	3	0	3( 1.1)	—	3( 0.6)
3	sex composition not mentioned		1( 0.4)	3( 1.3)	4( 0.8)
4	2	2	34(12.7)	22( 9.2)	56(11.1)
4	3	1	12( 4.5)	3( 1.3)	15( 3.0)
4	4	0	1( 0.4)	—	1( 0.2)
Five or more with no sex preference			1( 0.4)	1( 0.4)	2( 0.4)
Five or more with son preference			5( 1.9)	5( 2.1)	10( 2.0)
Non-response			18( 6.7)	9( 3.8)	27( 5.3)
Total			268(100.0)	238(100.0)	506(100.0)

Figures in brackets denote percentages.

ween the ideal and the actual family size.

The difference-of-proportions approach and difference-of-difference test<sup>3</sup> show that the ideal family size concept is determined by education and caste, though the interaction between caste and education is not significant (Table 4).

It may be noted that if the above ideals are realised the population would grow at a moderate exponential rate. Given the current population structure it may even be a high rate due to the population momentum caused by the large base of the age pyramid.

If the desired family size is less than 4 as is the case here the couples have to do something to restrict family size—they have to use family planning methods. Table 5 shows that the majority of respondents were in favour of family planning. Data also show (calculations are not given here) that only a very small proportion (3.0 per cent) of those who were against family planning had a valid reason, which was 'the fear of after-effects', others gave



TABLE 4

## Caste, education and ideal family size

Caste	Education	Ideal Family Size			Proportion reporting less than/equal to 3
		3	4+	Total*	
High	Uneducated	17	4	21	0.8095
	Educated	133	16	149	0.8926
	Total	150	20	170	0.8824
Others	Uneducated	103	46	149	0.6913
	Educated	142	18	160	0.8875
	Total	245	64	309	0.7929
Total	Uneducated	120	50	170	0.7059
	Educated	275	34	309	0.8900
	Total	395	84	479	0.8246

\* Excluding non-response

x<sup>2</sup> For difference between education groups = 25.70

x<sup>2</sup> For difference between castes = 6.07

x<sup>2</sup> for difference between caste and education = 1.27

TABLE 5

## Distribution of respondents by attitude to family planning

Attitude	Developed villages	Less developed villages	Total
Favourable	187(69.8)	201(84.5)	388(76.7)
Against F.P.	10( 3.7)	22( 9.2)	32( 6.3)
Indifferent/other	53(19.8)	2( 0.8)	55(10.9)
Non-response	18( 6.7)	13( 5.5)	31( 6.1)
Total	268(100.0)	238(100.0)	506(100.0)

Figures in brackets denote percentages.

reasons such as lack of knowledge, lack of interest, absence of need, etc. which were not necessarily against the principle of family planning.

Analysis revealed that 70 per cent of the respondents knew of at least one family planning method. Further, sterilisation, popularly known as *nasbandi* or 'operation', was known to almost all the respondents who had some knowledge of family planning. A little less than half of the respondents knew about the condom; other methods were less known (Table 6). It can also

TABLE 6

**Distribution of respondents by knowledge of family**

Method	Developed villages	Less developed villages	Total
Sterilisation*	183(68.3)	164(68.9)	347(68.6)
Condoms	126(47.1)	110(46.2)	236(46.6)
IUCD	47(17.5)	41(17.2)	88(17.4)
Oral Pills	17( 6.3)	19( 8.0)	36( 7.1)
Self Control/others	13( 4.9)	25(10.5)	38( 7.5)
At least one method	190(70.9)	168(70.6)	358(70.8)
Non-response	78(29.1)	51(21.4)	129(25.5)
No knowledge	—	19( 8.0)	19( 3.8)

Figures in brackets denote percentages.

\* Both vasectomy and tubectomy were equally known:

be said that the respondents' knowledge of family planning would be higher than the observed level because most cases of non-response (as in the case of unmarried, widowed, or divorced respondents) could not imply total ignorance. It may be noted here, that in 1985-86 the Government of India took a new step, and for the first time since the emergency, induced the state governments to design action programmes for attaining the sterilisation targets assigned to them. In response to this, the U.P. Government designed a weighted evaluation system for assessing district performance—family planning was given three times the weightage over other programmes. Further, at the district level, revenue and planning agencies were roped into the programme—these agencies have been directly involved in the implementation of social welfare programmes such as the distribution of loans and house sites, rural development and rural employment programmes such as IRDP, TRYSEM, etc. The sub-divisional officer supervises the activities of both the health department and the revenue and planning agencies. The camp approach was also renewed. This seems to have heightened public interest and knowledge in family planning, and mainly in sterilisation.

Further, the question regarding the respondents' perception of the best method of family planning revealed that sterilisation was preferred by about 53.6 per cent of the respondents. Condoms were considered to be the best method by only 6.7 percent, while other methods were reported as best by fewer respondents. However, the rate of non-response for this question was quite high (33 per cent). These revealed preferences can be understood in the light of the knowledge pattern shown in Table 6. In most cases, the

respondents preferred sterilisation simply because they knew only about sterilisation, or about stentisation and condoms. As such then, subjective comparison between sterilisation and methods other than the condom, does not arise.

The study also indicated that less than 10 per cent of the respondents approved of abortion. Others felt that abortion was equivalent to murder, is a sin, and adversely affected the health of women. It seems that the health workers at the block or village levels, themselves also do not approve of abortion.

A third of the respondents were unaware of the law regarding the minimum age at marriage, and one-third had heard about it but were misinformed about the legal minimum age. Thus, only one third of the respondents had correct knowledge of the law. Moreover, a sizeable proportion of the respondents (27.3 per cent) felt that the right age for marriage for girls was 18. Although the majority of the respondents knew that early marriages result in large families and adversely affect the girl's health and education, the responsibility of parents to ensure sexual purity of their daughters before marriage was the main factor responsible for early marriages. There was also the fear that late marriages may invite social criticism, cause psychological problems due to unfulfilled sexual desires, lead to premarital sex, or lack of inter-spousal love and understanding after marriage. The age at marriage of girls was particularly low among the low castes.

In the past, research has shown an inverse relationship between fertility and socio-economic status, with the poor producing more children. In this context, a direct question was asked, 'Why do' the poor produce more children?' Contrary to the popular belief that the poor produce more children because it helps them economically, their high fertility was largely due to carelessness, that is lack of planning, illiteracy, lack of communication, and fatalism. Only 8 per cent of the respondents gave economic or power contribution as the reason for their having large families (Table 7). This shows that well designed communication programmes can go a long way in limiting reproduction among the poor. However, an area development officer, an agriculture graduate, opined that high fertility among the poor was a result of the absence of education, lack of entertainment, low standard of living, and unemployment. Insecurity and paranoia may be other reasons. To quote him: "The poor know that their children will not get service (employment other than agricultural). Therefore, the more are they in number, the more will they earn from labour—more will they eat, drink and be happy. If you motivate a poor man for family planning, he will be frightened—he feels why he alone (and not a rich man) is compelled to use family planning methods".

The above findings show that in principle, the rural poor are in favour

TABLE 7

**Causes of high fertility among the poor**

Cause	Developed villages	Less developed villages	Total
Illiteracy	36(13.4)	51(21.4)	87(17.2)
Lack of entertainment	31(11.6)	19( 8.0)	50(10.0)
Belief in God—'Children are God's gift'	25( 9.3)	60(25.2)	85(16.8)
Power	1( 0.4)	—	1( 0.2)
Economic contribution/contribution to labour power	22( 8.2)	18( 7.6)	40( 7.9)
Carelessness/lack of planning	54(20.2)	46(19.3)	100(19.8)
Lack of knowledge about FP methods	62(23.1)	23(10.0)	85(16.8)
Others	26( 9.7)	16( 6.7)	42( 8.3)
Non-response	11( 4.1)	5( 2.1)	16( 3.2)
<b>Total</b>	<b>268(100.0)</b>	<b>238(100.0)</b>	<b>506(100.0)</b>

Figures in brackets denote percentages.

of the idea of birth control and the acceptance of family planning methods. Why do they not accept family planning then? The question is not easy to answer. Our qualitative data and evidence from other studies<sup>4</sup> show that the following three are probably the main reasons for non-acceptance of family planning. First, there is a serious lack of result-oriented educational programmes coupled with certain misconceptions about sterilisation which is the most known and most popular method of family planning. The provision of knowledge and easy access to other methods and a more caring and human approach to sterilisation can, therefore, go a long way in promoting family planning acceptance among the rural poor.

Second, we should recognise that the real problem of social enquiry is not the persistence of high fertility but the problem of transition. In the past, high fertility was traditional and unquestionable. Unless changes occur which make people question and think responsibly about reproductive matters fertility cannot be expected to decline. Fertility has declined whenever functions of children have declined or society has developed some functional alternatives to children. To the extent the poor benefit from such changes, fertility is likely to decline. 'The Revised Strategy for National Family Welfare Programme 1986' which attempts to link the family planning programme with poverty alleviation programmes is thus a step in the right direction.

Third, and more fundamentally, for the poor in the study villages, poverty is a problem of the absence of work, food, clothes and housing; it is not

merely a case of relative poverty. And, spending their entire lifetime in suffering, exploitation and poverty, has developed in them a sense of dependence and complacency. Developing the underdeveloped in this situation will thus require not only the welfare approach which is essentially economic but also changes in the overall structure such that they can remove their alienation. This can be expected to reduce fertility through the proximate factors of locus of control, structuring of objectives, capacity to act, and planning.

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## **BOOK REVIEW**

### **“FERTILITY IN INDIA: AN ECONOMIC ANALYSIS OF A METROPOLIS”**

by S.C. Gulati.

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*Price:* Rs. 185 (Pages: 203, hardbound).

There is documentary evidence to show that concern about the growing population and its effects on the life of people has been expressed from historic times. Davis and Blake<sup>1</sup> also point out that every society regulates the fertility of its members through controls on behaviour. However, Malthus was the first to hypothesise the growth rate of population and link it to the behaviour of different socio-economic groups. Among the measures suggested by Malthus to avoid the “population trap”, was “moral restraint” to limit the number of progeny. He suggested non-marriage for the poor, since he argued that the poor produced many children, and that that was at the root of their poverty and the cause of the “population trap”.

It is important to note that the Malthusian theory was formulated after the French revolution which had demanded rights for the poor, and as a consequence of the rising unrest among the poor, the British government had formulated “Poor Laws”. The Malthusian theory propounded that the poor themselves were responsible for their poverty and it is they who should modify their behaviour to solve their problems.

The European countries did not experience a “population trap” since they could reduce the pressures of their growing populations through large scale out migration.<sup>2</sup> Substantial economic developments were seen after the industrial revolution and through the use of the colonial powers to exploit human and other, including natural, resources of the colonies.<sup>3</sup> The Malthusian theory was therefore unacceptable in Europe. Its revival was seen only after the “population trap” was experienced by the Third World countries, and more acutely, during the mid-twentieth century. Third World populations are growing much faster than the experience of preindustrial Western Europe, when their growth rates were highest.

The high growth rates in the Third World countries are mainly due to their high birth rates. On the other hand, the gap between the death rates of the First and the Third World countries is narrowing. Over the past 25 years, death rates in parts of Asia and Latin America have dropped in as much as 50 per cent; and by over 30 per cent over much of Africa and the Middle East.

The population problem is a serious issue that no Third World country can afford to ignore. The gravity of the problem increases with the realisation that population growth continues even after birth rates decline substantially. There are two basic reasons for this momentum. First, high birth rates cannot be altered substantially overnight. The social, economic and institutional forces that determine fertility over the course of centuries cannot be changed by the mere provision of technologies for controlling fertility nor through pressures for accepting these technologies. Even in the European countries, it took several decades for fertility to decline. Consequently, even if top priority is assigned to programmes of reduction of population growth by the Third World countries, it will take many years before fertility is reduced to desired levels. Ignoring the problems, will have much graver consequences.

The second reason for the hidden momentum to population growth comes from their age structure, wherein the young—the future parents—constitute a much larger share of the total population. It becomes important that these young people have lower fertility so that growth rate is slowed and the momentum is slowed down.

An investigation of the cause of high fertility in Third World countries has therefore to receive top priority from policy makers. The author makes a sophisticated analysis of data collected in 1970 from 8570 households in the Metropolitan area of Delhi. His work is based on data collected from 5624 women who were married only once, were below 40 years of age, and were currently married (pp. 154-155)

The author says, "The survey was conducted in 1970 and a detailed version of the sampling design and procedure is provided by Desai (1969) (p.60). From the fact that Desai wrote "Fertility and Family Planning in Delhi" in a mimeographed paper gives an impression that the data refers to the period before 1970. On page 23 the survey period is mentioned as July 1966 to August 1970. In any case, conditions relating to the population that give information to policy makers in India, have undergone considerable change over the period intervening between the survey and today. This adds to the burden of the author in interpreting the data for the consumption of policy makers today. The author however says, "This study, relies heavily on rigorous scrutiny, testing and analysis of the data followed by econometric models of fertility behaviour. An econometric model is preferred here in order to: (i) formulate a comprehensive model, putting together the plausible hypotheses of fertility behaviour; and (ii) systematically deduce a consistent set of hypotheses. Such an integrated approach, starting from the formulation of a behavioural model and the testing of different fertility related variables using econometric methods, may lead to the characterisation of realistic fertility behaviour and a set of meaningful policy packages.

The ultimate test of any econometric approach being its policy use, this

study attempts to weave together alternative theories and postulates in a policy framework" (p.22). "The study is based on 34 variables covering demographic, social, cultural and economic characteristics. The statistical techniques used include factorial analysis, simultaneous equations, regression models of fertility behaviour, and finally simulation of the models to deduce policy implications" (p.22).

To add to existing knowledge and to help in interpreting the data collected some two decades earlier, it becomes imperative that the author should review the work done by others. It is often said that research on fertility behaviour of humans has received an extensive multidisciplinary attention which perhaps no other area of behaviour has received. The author reviews the available researches on fertility (mostly done in the 1960s and none after the mid-1970s) and concludes, "Hardly any attempt is being made to structure the simultaneous equation system or use other relevant multivariate techniques to highlight the intricate relationships between fertility and its determinants accounting for the simultaneity bias".

"Further contradictory empirical evidence on the determinants of fertility, either due to differential coverage of relevant characteristics or specifications of the adopted models, has further complicated the issue. So far it has not been possible to highlight the relative importance of different variables influencing fertility. So no conclusive results and generalisations could be evolved from the existing literature on fertility in India" (p. 56).

Through his study, the author says, "it will be possible to highlight the exact nature of relationships between fertility and its determinants through the application of multivariate analytical techniques using survey data from Delhi metropolis" (p. 57).

The study provides a good example for students of population studies of the application of various sophisticated techniques for the analysis of field data. It has become easier to undertake such analyses due to the availability of computers. What is needed is the knowledge as to how to analyse. Pages 157 to 187 of the book provide details of data analysis and portions of the text in the earlier pages help in understanding the tables.

As the findings of the study the author mentions that (1) contraceptive usage inhibits fertility, (2) the education of women has a negative impact on fertility, (3) son preference has a positive impact on fertility, (4) female employment in higher occupational categories has a small but inhibitive net impact on cumulated fertility as well as the desire for additional children, whereas it has a significant and promotional impact on effective contraception.

"Therefore, the principal determinant of cumulated fertility and contraception are educational attainment, contraceptive usage, son preference



and female employment. Thus mitigation of son preference, educational improvement among women and extensive use of contraceptive methods are the principal policy variables to be manipulated immediately so that they can have both a transitional and ultimate effect on fertility'' (p.152).

The policy maker is still left with questions: how to increase contraceptive usage?; how to get parents to send their daughters to school?; how to reduce the drop out from school of the few girls who do make it to the initial classes?; how can women be provided employment?; and, how to increase the value of a female child and discourage high fertility for getting sons?

Extensive work, not just infertility, family planning etc. but in much wider areas of the humanities has led to the conclusion that unless issues of development are tackled urgently, disparities that are showing widening gaps are reduced, and women are empowered to control their own lives and valued as equal members of the society, the future and especially that of the Third World countries is bleak.

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**Dr. Malini Karkal**

## NEWS AND NOTES

### DR. HALFDAN MAHLER TO LEAD IPPF

On April 6th, 1989, Dr. Halfdan T. Mahler took on new responsibilities as Secretary General of the International Planned Parenthood Federation (IPPF). Dr. Mahler, Director General Emeritus of the World Health Organisation, said of his decision to lead IPPF after 15 years as Director General of WHO, "This position poses a challenge to me in a very personal way. I want to spend the rest of my career working to strengthen the family planning movement and to clarify its great importance to women's health, to the well-being of children and to global development efforts. Family planning has a prominent role to play in development and women have a prominent role to play in family planning. We must see to it that the physical, social and spiritual energies of women are liberated for the benefit of the world community", he concluded.

IPPF is the world's leading voluntary family planning organisation, working in 125 countries to initiate and support family planning services and to educate people and governments about the benefits for the whole family, particularly mothers and children, of spacing and planning births. It has an annual budget of US \$72 million, and receives funding from governments, foundations and private individuals. Its International Office, where the Secretary General is based, is in London. The President of the IPPF is Mrs. Avabai B. Wadia.

Dr. Mahler was born in Vivild, Denmark. He graduated from the University of Copenhagen and holds a postgraduate degree in public health. After planning a mass tuberculosis eradication campaign in Ecuador, he joined WHO and spent 10 years in India attached to the national Tuberculosis Programme. He was appointed WHO Director General by the 26th World Health Assembly in 1973, and served three five-year terms, retiring in July 1988. He was declared Director General Emeritus of WHO by the 41st World Health Assembly in 1988.

Dr. Mahler will succeed Mr. Bradman Weerakoon, who leaves IPPF at the end of a five-year term to take up a position with the government of Sri Lanka.

### 21st IUSSP GENERAL POPULATION CONFERENCE

The International Union for the Scientific Study of Population (IUSSP) will hold its XXIst General Population Conference in New Delhi from September 20 to 27, 1989 at the invitation of the Indian Association for the Study of Population and under the patronage of the Indian Government.

The scientific programme of this Conference will deal with fertility, mortality, migration and population redistribution, family demography, life cycle and nuptiality, policies and individual behaviour, methodology, patterns of population growth, etc. It will have one plenary session, and 27 formal and 18 informal sessions.

The Conference is expected to be of great interest not only to demographers, but also to statisticians, economists, geographers, sociologists, anthropologists, physicians, administrators, policy makers and others concerned with population problems.

Invited papers will be published in the Conference Proceedings before the Conference. Contributed papers are also strongly encouraged. Copies of the Conference Information Bulletin No. 1 containing the complete scientific programme, as well as the outlines describing the contents of all the sessions are available upon request. Further information is available from Bruno Remiche, Executive Secretary, IUSSP, 34 rue des Augustins, B-4000 Liege, Belgium.

## **THE JOURNAL OF FAMILY WELFARE**

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3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate.
4. To undertake or promote studies and activities in regard to services, training, education and research programmes covering the demographic, sociological, economic, medical and other relevant aspects of human fertility and its regulation, including methods of contraception, sterility, and sub-fertility, sex and family life education, marriage counselling, population education and human ecology
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# **FOAM TABLETS: AN ACCEPTABLE NON-TERMINAL METHOD—EVIDENCE FROM RURAL MADHYA PRADESH AND TAMIL NADU**

**MRS. SHANTHA RAJAGOPAL\***

**MRS. A. A. NAGARKAR\***

**MR. N. V. KOKATE\***

**and**

**DR. SHIREEN J. JEJEEBHOY\*\***

## **Introduction**

The family planning programme in India has increasingly been stressing the promotion of non-terminal methods. As a result of this shift in emphasis from permanent to spacing methods, during the decade of the 1980s, there has been an impressive increase in the utilisation of the available non-terminal methods. While the levels of use of non-terminal methods tend to be well documented, the pattern of their use and their acceptability to users has not been systematically assessed. While the programme is in theory committed to the provision of a cafeteria of methods, in fact, easily available non-terminal methods are restricted to IUDs, oral pills and condoms.

In contrast, the programme of the Family Planning Association of India (FPAI) has attempted to promote a wider selection of methods, including diaphragms, and such spermicides as jellies and foam tablets. This study reports on the extent to which one of these methods, specifically foam tablets, is found acceptable among various populations in the country. The objective of this study then is to study the quality of utilisation of foam tablets, its effectiveness, duration of use and reasons for its discontinuation in two culturally different settings in India, namely rural Madhya Pradesh and rural Tamil Nadu.

It is well known that the acceptance of any contraceptive method depends on a variety of factors—its low cost, ready availability, and especially its safe use and simplicity. Each of these conditions is met by foam tablets. Evaluating their effectiveness, nevertheless, is difficult since the effectiveness of the method depends heavily on user related factors, that is, on the user's applying the method correctly and consistently—estimates of failure vary widely, but used properly, there is evidence that failure rates can be between one and seven pregnancies per 100 woman years.<sup>1</sup>

\* Research & Statistical Officer; and \*\* Director, Research & Evaluation, Family Planning Association of India, Bajaj Bhavan, Nariman Point, Bombay 400 021 (India).

### **The FPAI Experience**

As a result, the Family Planning Association of India introduced foam tablets among the methods supplied in its various programmes, on a small scale, as early as the 1960s; until 1980, acceptors of this method comprised an insignificant and constant proportion of all acceptors recruited by the Association. In contrast, during the decade of the 1980s, recruitment of new foam tablet acceptors has increased noticeably. Data on new acceptors of foam tablets recruited by the Association's various units, and the couple years of protection offered by foam tablets suggest that there has been a sustained interest in utilisation of foam tablets in the programme since 1980. In 1980, for example, the Association recruited a total of 434 new acceptors of foam tablets, and utilisation of this method contributed a total of 112 couple years of protection.<sup>2</sup> By 1983, a total of 2330 new acceptors were recruited;<sup>1</sup> over the next five years, this number increased by 45.2 per cent to 3384.<sup>4</sup> Over the same five year period, 1983 to 1988, couple years of protection accorded by foam tablets increased from 1650 to 2207, that is, by as much as 26 per cent.

In other words, there is evidence from India that the method is attractive to both first time and continuing users. With a view to its wider applicability, this study attempts then to study the experience of the FPAI in promoting foam tablets as a spacing method among young rural couples, and comments on the wisdom of expanding the foam tablet programme and incorporating this method into the national programme.

### **Data**

Comprehensive service statistics are maintained by each unit of the FPAI, for each foam tablet acceptor, and include such data as demographic and socio-economic characteristics, duration of continued use and reasons for its discontinuation. These data provide a wealth of information regarding the pattern of its use. This study has selected for analysis service statistics from two rural FPAI projects—one located in the north and the other in the south—with the largest number of foam tablet acceptors during the period 1984-1986.<sup>4</sup> The first, entitled the Niwas Project, is a rural, economically backward and tribal area in Mandla district, Madhya Pradesh; the second, the Gandhigram Community Based Distribution (CBD) Project operates in a rural area of Anna district, Tamil Nadu. The sample includes a total of 229 and 416 new acceptors from Niwas and Gandhigram respectively, recruited by each project during a 24 month period from April 1984 to March 1986.

## Results and Discussion

### *Profile of acceptors*

A breakdown of all new acceptors registered by the two programmes under study reveal in fact a diverse pattern of method preference in each locale. For example, in Niwas, the most preferred method was condoms, selected by over 42 per cent of its new acceptors; and in Gandhigram, over half of all new acceptors selected oral pills. In neither case were foam tablets the most preferred method. In fact, foam tablets have been utilised by a relatively small proportion, about one-tenth, of all new acceptors in Niwas and Gandhigram respectively (10 per cent and 10.8 per cent), and the use of foam tablets has contributed a total of 275 and 163 couple years of protection in Niwas and Gandhigram respectively, that is, again, 18 per cent and 13 per cent of the total protection afforded by all non-terminal methods in these two areas over the 1984-86 period, as seen in Table 1.

TABLE 1

Methodwise distribution of new acceptors and couple years of protection,  
Niwas and Gandhigram Projects, 1984-86

	Niwas	Gandhigram
<i>New acceptors</i>		
Terminal Methods		
Vasectomy (Referred)	113	—
Tubectomy (Referred)	820	—
Non-terminal methods		
IUD	122	—
Oral pills	32	2,128
Condoms	975	1,579
Foam tablets	229	449*
Total new acceptors	2,291	4,156
% Non-terminal of all new acceptors	59.3	100.0
New foam tablet acceptors as a % of all new acceptors	10.0	10.8
New foam tablet acceptors as a % of all new non-terminal method acceptors	16.9	10.8
<i>Couple Years of Protection</i>		
By foam tablet users	275	163
By all non-terminal method users	1,538	1225
CYP afforded by foam tablet use as a proportion of CYP accorded by all non- terminal method use(%)	18	13

\* Information on 33 foam tablet acceptors is not available for Gandhigram.

Table 2 presents the demographic profile of the two samples. Foam tablets are clearly suitable as a spacing method at early stages of a couple's reproductive career, and hence we would expect a concentration at young ages and low parities.

TABLE 2

Percentage distribution of acceptors by age and parity at acceptance

Niwas Gandhigram		
(N)	229	416
<i>Age (years)</i>		
15-19	16.6	7.5
20-24	41.9	37.0
25-29	27.5	27.6
30-34	13.1	16.6
35-39	0.9	7.7
40-44	—	3.6
Mean	23.9	26.6
<i>Number of surviving children</i>		
0	10.9	0.7
1	43.2	24.0
2	34.1	31.5
3	8.3	21.6
4	3.5	13.2
5	—	4.8
6	—	4.1
Mean	1.5	2.6

The age and parity distributions show that in Gandhigram, about 45 per cent of all acceptors were aged under 25, while in Niwas in rural Madhya Pradesh, almost three out of five acceptors were aged under 25 (58.5 per cent), and as many as 16.6 per cent were aged under 20. The mean ages of acceptors then was 23.9 in Niwas, compared with 26.6 in Gandhigram.

Correspondingly, the parity distribution indicates that again, it is in Niwas that foam tablets are most likely to be used by women who have fewer than two children; over half (54 per cent) of these acceptors had no children (11 per cent) or one child (43 per cent) at acceptance. In contrast, only one quarter (24.7 per cent) of acceptors from Gandhigram adopted foam tablets at parity zero or one. In Gandhigram, the parity distributions resemble those expected from more conventional methods. On average, each acceptor in Gandhigram had 2.6 children at acceptance, in contrast with as few as 1.5 in Niwas. The experience of Niwas clearly suggests that there is motivation for spacing at

very early ages and parities even among poor rural couples; and foam tablets provide an attractive method to serve this purpose.

Table 3 presents the distribution of acceptors by such social and economic characteristics as education, occupation, income and religion.

TABLE 3

Percentage distribution of acceptors by selected social and economic characteristics

Niwas Gandhigram		
(N)	229	416
<i>Education of acceptor</i>		
Illiterate	90.0	53.4
1-4	2.6	8.4
5-7	3.1	19.2
8-10	2.2	18.5
11+	2.2	6.5
<i>Education of husband</i>		
Illiterate	63.8	33.9
1-4	6.1	6.5
5-7	12.2	26.2
8-10	7.4	21.6
11+	10.5	11.8
<i>Occupation of acceptor</i>		
Housewife	—	23.1
Service	4.4	6.0
Business	3.5	3.6
Agriculture/Others	92.1	67.3
<i>Religion</i>		
Hindus	99.6	85.6
Muslims	0.4	1.0
Christians	—	13.4
<i>Household income(Rs.)</i>		
0-250	90.0	8.4
251-500	5.7	75.0
501-750	2.2	7.9
751+	2.2	8.7
Mean	147	421

The results uniformly suggest that foam tablets have been utilised by illiterate and lesser educated women, and women from low income households



in both locations. For example, 90 per cent of foam tablet users in Niwas were illiterates, compared with 54 per cent in Gandhigram. While 90 per cent of Niwas users came from households with monthly income levels under Rs. 250, only eight per cent of users from Gandhigram came from households with income levels under Rs. 250 per month. The occupational distributions indicate that while the overwhelming majority of users in Niwas were engaged in agricultural labour or cultivation, this proportion was 67 per cent in Gandhigram.

While the profile of acceptors in each location is somewhat unique, the results uniformly suggest that foam tablets have been utilised by low income and lesser educated households. This is an encouraging finding, which presents a case for the inclusion of this method into the cafeteria of methods provided by the national programme.

#### *Failure and continuation*

Method failure rates refer to pregnancies occurring despite the use of foam tablets and are reported in terms of woman months of use. A review of the literature on spermicides suggests that method failure rates for foam tablets vary widely: some estimates indicate failure rates of one to seven per 100 woman years, other larger surveys report higher rates varying from 3 to over 20 pregnancies<sup>1</sup> at 12 months.

Information on method failure was elicited only from the Niwas project. Table 4 presents these failure rates; failure rates fell well within what is reported internationally: the crude 12 month failure rate indicated about 3.6 pregnancies per 100 woman years, while the net life table rate at 12 month rate indicated that about 4.2 failures occurred per 100 woman years of use. This compares with failure rates of 7.9 in the Philippines<sup>5</sup>, 6.5 in Bangladesh<sup>6</sup>, 9.6 in Ghana<sup>7</sup>, and 12.8 in Yugoslavia.<sup>8</sup>

TABLE 4

#### **Failure and continuation rates**

	Failure Rates		Continuation Rates
	Crude	Life Table Net	
<i>At 6 months</i>			
Niwas	.0051	.0054	.9023
Gandhigram	—	—	.3494
<i>At 12 months</i>			
Niwas	.0358	.0417	.5552
Gandhigram	—	—	.0668

While failure rates associated with the use of foam tablets were low, there is evidence to suggest that the use of this method is erratic and unlikely to be continuous. Information on duration of use is available for both the Niwas and Gandhigram projects. The results suggest, somewhat surprisingly, that it is Niwas which reports the most sustained pattern of use. By six months, the continuation rate was .9023 in Niwas, as compared with only .3494 in Gandhigram. By 12 months, the continuation rate had fallen further in each case: to .5552 in Niwas and .0668 in Gandhigram. In other words, only about half of all users in Niwas, and as few as seven per cent in Gandhigram continued to use the method for the full 12 month period. Clearly then, though the method may be quite effective, the results suggest that its use is erratic and the length of protection it offers as a result is limited. Comparable continuation rates reported in studies in other less developed countries such as Bangladesh and Zaire are about .42.<sup>3,6</sup>

#### *Reasons for erratic use*

As in the case of failures, information on reasons for discontinuation were only available from service statistics maintained at the Niwas project, as shown in Table 5.

TABLE 5

**Distribution of main reasons for discontinuation of foam tablets in Niwas\***

	1-12 Months	1-24 Months
Failure of method	3.0	4.8
Temporarily away	—	0.9
Planned pregnancy	13.4	29.3
Dislike/Dissatisfied	2.2	5.7
Switched method (Sterilisation)	5.6	7.0
Nausea/Sickness	0.4	1.7
Bleeding/pain/burning	12.0	15.7
Lost to follow-up	0.4	0.4
Changed village	2.1	3.1

\* Gandhigram has not provided reasons for discontinuation.

Nevertheless these give some insight into reasons for the lack of sustained use of foam tablets. First, being a non-terminal method used by a number of couples without any children, almost half of all discontinuation occurs because a pregnancy is planned. However, almost forty per cent of all discontinuation has occurred because of side effects—and this is a large proportion for a spermicidal method. Among side effects, it is the discom-

fort of a burning sensation which has led the majority to discontinue use; another one sixth have switched to a terminal method, and as we saw earlier, about five per cent report failures within 24 months. Obviously then, efforts must be made to provide complete information to acceptors on possible side effects and their severity in terms of the user's health.

In Niwas, of the total of 229 acceptors under observation, as many as 79 had discontinued use within less than 12 months. In contrast, as many as 116 cases had continued to use the method for at least 12 months; of these 79 or 68 per cent had discontinued at the time of investigation. In order to identify possible socioeconomic and demographic factors which may have influenced continuation or other wise of foam tablets, a comparison between discontinuers and those who have continued using foam tablets for at least 12 months (excluding 34 continuing cases for whom observation was truncated at less than 12 months) was undertaken. Using the limited data available, that is, age, parity and education, the results surprisingly suggest little variation between these sub-populations. While it is true that discontinuers tend to be slightly younger than continuers (about one year), they neither have fewer children nor are they significantly less educated than continuing users, as shown in Table 6.

**TABLE 6**  
**Percentage distribution of main factors distinguishing between**  
**continuers and discontinuers**

	Discontinuers		Continuers	
	All	All switchers	Used for > 12 months and dropped	Used for > 12 months and active
(N)	79	68	79	37
<b>Age (years)</b>				
15-19	15(19.0)	15(22.0)	10(12.6)	2(5.4)
20-24	34(43.0)	31(45.6)	30(38.0)	16(43.2)
25-29	21(26.6)	18(26.5)	20(25.3)	18(48.6)
30-34	8(10.1)	4(5.9)	18(22.8)	1(2.7)
35+	1(1.3)	0	1(1.3)	0
Mean Age	23.6	22.8	25.1	24.4
<b>Parity</b>				
0	7(8.9)	7(10.3)	7(8.9)	4(10.8)
1	30(38.0)	29(42.6)	35(44.3)	18(48.6)
2	33(41.8)	24(35.3)	24(30.4)	12(32.4)
3	6(7.6)	6(8.8)	10(12.6)	2(5.4)
4	3(3.8)	2(2.9)	3(3.8)	1(2.7)
Mean Parity	1.6	1.5	1.6	1.4
<b>Education</b>				
0	70(88.6)	62(91.2)	69(87.3)	33(89.2)
1-4	5(6.3)	5(7.3)	2(2.5)	—
5+	4(5.1)	1(1.5)	8(10.2)	4(10.8)
Mean	0.5	0.25	0.7	0.7

## Conclusion

The results lend considerable support for the inclusion of foam tablets in the national family planning programme. It is notable that even in rural areas, the method has gained considerable use among low income, young and low parity couples. The fact that it is acceptable and utilised in both north and south Indian cultural conditions, ranging from a tribal area in Madhya Pradesh to a rural area of Tamil Nadu suggests that it has some potential for use on a wider scale in rural India. And though a non-terminal method, the failure rates associated with its use tend to be relatively low. In contrast, method discontinuation tends to be high, but a closer look at reasons suggests that as many as half of all discontinuers have done so deliberately in order to have another child. Nevertheless, another two-fifths of all drop outs do so because of perceived side effects. One implication of this study is the need to provide some means whereby the user is given complete information regarding the potential risks to health of the method and ways of minimising the side effects. The method is clearly acceptable; the fact that ten per cent of all acceptors are willing to accept it and the fact that almost half of all acceptors in Madhya Pradesh have used the method for at least a year is sufficient evidence of this. In short, the results confirm that foam tablets are an effective means of contraception; failure rates associated with its use are within acceptable limits.

Nevertheless, the results point to high rates of discontinuation; continuation rates are low and the duration of protection accorded by the method is relatively short. But this in itself need not detract from the method since it may nonetheless succeed in protecting a young couple for some months during the peak childbearing years.

There are two obvious limitations of this study. First is the fact that it has been limited to two small pockets of rural India, and the question of its wider acceptability need to be further investigated. Second, it is based on service statistics, which tend to be relatively sparse, rather than a survey of users, which would have the advantage of obtaining information on attitudes, use histories and so on in a more systematic way. Both these are valid limitations and suggest the need for a wider and more comprehensive survey of users.

Notwithstanding these limitations, from the results of this study emerge several implications for the family planning programme which are worthy of further investigation. First, the evidence provided here suggests that foam tablets do have a potential for wider use in the national programme since they are acceptable to rural users in diverse cultural conditions. What is especially appealing is that it found to be attractive to young and low parity couples, including even those aged under 20 and at parity zero. At the same

time, however, discontinuation rates are high, as a result mainly of discomfort and so on related with its use. It is here that the role of the service provider becomes important, as a deterrent to discontinuation.

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# **MODERNISATION AND FERTILITY DIFFERENTIALS**

**DR. M. HARI\***

## **Introduction**

All modernised nations in the world have low levels of fertility. Many studies<sup>1-4</sup> have confirmed the negative relationship between fertility and level of modernisation as a social variable. Using Harvard project data Williamson<sup>5</sup> concluded that subjective efficacy and ideal family size function more as independent determinants than as intervening variables. In a cross-national study on 'modernism', Kahl<sup>6</sup> found a consistent inverse relationship between the degree of modernism and the size of the ideal family desired by most occupational groups.

'Modernity' has been defined by a variety of indices, such as level of education, exposure to mass media, urban residence, type of occupation, ownership of modern household items or degree of adherence to religious or cultural traditions. When individuals or populations are classified on a scale of modernity, an inverse relationship between modernity and fertility is found.<sup>7</sup> Studies on individual modernisation assume that there is a 'syndrome' of psychological modernity which includes several dimensions viz., subjective efficacy, openness to new experience and change, valuation of time and punctuality, acceptance of findings of modern science and medicine, granting rights to and equal treatment of women, autonomy in the face of traditional kinship obligations, and acceptance of family size limitations.

## **Objectives**

There are very few Indian studies<sup>8,9</sup> on the impact of modernisation on fertility behaviour. Hence, an attempt has been made in the present paper to examine whether those who are less modern differ from the more modern with regard to fertility measures such as cumulative fertility, ideal family size, desired family size and additional family size.

## **Area, Sample and Methodology**

The study was conducted in Nellore town in Andhra Pradesh. Nellore is a Class I town with a population of 2.36 lakhs in 1981. The decennial growth rate of the population during 1971-81 was 76.8 per cent, the highest in Andhra Pradesh. The literacy rate for males (63.35%) and females (48.67%) is high as compared to all other towns in the Sri Venkateswara University

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area. No paper circulation and the availability of modern electronic media, particularly television sets, are the highest in this town.

The sample unit was the household comprising of eligible couples with one or more living children, and the wife not exceeding 44 years of age at the time of survey. A stratified proportionate simple random sampling design was used. The study area was stratified on the basis of existing municipal wards, and lists of households satisfying the above criteria were prepared ward-wise based on eligible couple registers. From these lists, a total of 600 households was randomly selected by applying weights to give a fair representation to each ward, the weight being the ratio of the number of households in a given ward to the total number of households in the universe.

#### *Defining more modern and less modern respondents*

A given person may hold modern views on certain dimensions and traditional views on other dimensions of individual modernity. Hence, the more modern and less modern respondents were differentiated on the basis of the cumulative score of the respondents on selected dimensions of modernisation viz., faith in man's efforts, openness to change, planning orientation, decision making, status of women and achievement. The minimum score on these dimensions was 39 and the maximum score 122. The respondents were divided into three groups namely, less modern (39-71), intermediate (72-98), and more modern (99-122), each representing approximately one-third of the total sample.

### **Results and Discussion**

#### *Modernisation and Cumulative Fertility*

An analysis of cumulative fertility indicates the number of children ever born to currently married women in the reproductive period. This provides a better understanding of the differentials in reproductive performance between the less modern and more modern respondents. The high fertility of the less modern respondents is confirmed by the data presented in Table 1.

TABLE 1

Mean live births of respondents by level of modernisation

Level of modernisation	Present age of wife		Total
	≤ 29 years	30+ years	
Less modern	3.01(81)	4.43(151)	3.93(232)
Intermediate	2.35(80)	3.65(114)	3.11(194)
More Modern	1.72(69)	2.68(105)	2.29(174)

The figures in brackets indicate the number of respondents.

On the whole, the less modern respondents had an additional 1.64 live births as compared to the more modern respondents (significant at 0.01 level). Even after controlling the present age of the respondents' wives, the less modern 'younger' (below 30) and 'older' (30+ years) respondents had 1.29 and 1.75 more live births than their respective counterparts in the more modern group (significant at 0.01 level). Thus, the more modern respondents in both the 'younger' and 'older' age groups had significantly lower fertility as compared to their respective less modern counterparts.

### *Ideal family size*

Marked differences in ideal family size were noticed between the less modern and more modern respondents. None of the less modern respondents stated one child as the ideal number. On the other hand, 5 per cent of the more modern respondents thought a one-child family to be ideal (Table 2). More than three-fourths (75.9 per cent) of the more modern respondents reported two children as their ideal family size as against only 1.3 per cent in the less modern group.

Three children was reported as an ideal number by 38 per cent of the less modern respondents as against only 20 per cent in the more modern category. None of the latter stated four children or more as their ideal family size, whereas 49 per cent and 12 per cent of the former reported four children, and five and above, respectively, as their ideal family size. Thus, the majority of the more modern respondents (80.5 per cent) considered 1-2 children as an ideal family size in contrast to 4-5 children as mentioned by nearly 61 per cent of the less modern respondents.

A similar trend was noticed in the case of both the 'younger' and 'older' age groups. While none of the less modern 'younger' and 'older' respondents considered 1-2 children as an ideal family size, as many as 36 per cent and 44 per cent of the more modern 'younger' and 'older' respondents, respectively did so. Three children were considered as ideal by 18 per cent and 20 per cent of the respondents in the 'younger' and 'older' groups in the less modern category respectively in contrast to only 3 per cent and 16 per cent in the more modern category. Irrespective of age, none of the respondents from the more modern group reported four children or more as their ideal family size, while 17 per cent and 44 per cent of the less modern respondents in the two age groups respectively did so. From these findings it can be concluded that the ideal family size is significantly higher among the less modern respondents as compared to the more modern ones.

### *Desired Family Size*

The desired family size was also observed to be considerably higher in the case of the less modern respondents (Table 3).



TABLE 2  
Percent distribution of respondents by level of modernisation and ideal family size

Level of modernisation	Ideal family size										Total				
	1	2	3	4	5+										
Present age of wife (years)															
	≤29	30+	≤29	30+	≤29	30+	≤29	30+	1	2	3	4	5+		
Less modern	—	—	—	1.3 (3)	78.1 (42)	19.8 (46)	12.9 (30)	26.2 (84)	3.9 (9)	7.8 (18)	—	1.3 (3)	38.0 (88)	49.1 (114)	11.6 (27)
Intermediate	—	—	17.0 (33)	13.4 (26)	21.7 (42)	36.6 (71)	2.6 (5)	8.3 (16)	—	0.5 (1)	—	30.4 (59)	58.2 (113)	10.8 (21)	0.5 (1)
More modern	1.1 (2)	3.5 (6)	35.1 (61)	40.8 (71)	3.5 (6)	16.1 (28)	—	—	—	—	4.6	75.9 (8)	19.5 (132)	—	—

Figures in brackets denote the number of respondents.

TABLE 3  
Percent distribution of respondents by level of modernisation and desired family size

Level of modernisation	Ideal family size										Total				
	Present age of wife (years)														
	1	2	3	4	5+	1	2	3	4	5+					
	≤29	30+	≤29	30+	≤29	30+	≤29	30+	≤29	30+	1	2	3	4	5+
Less modern	—	—	1.3 (3)	2.6 (6)	13.8 (32)	18.5 (43)	13.8 (32)	25.9 (60)	6.0 (14)	18.1 (42)	—	3.9 (9)	32.3 (75)	39.7 (92)	24.3 (5)
Intermediate	0.5 (1)	—	17.0 (33)	16.5 (32)	21.1 (41)	33.0 (64)	2.6 (5)	7.2 (14)	—	2.1 (4)	0.5 (1)	33.5 (65)	54.1 (105)	9.8 (19)	2.1 (4)
More modern	1.7 (3)	2.9 (5)	34.5 (60)	43.1 (75)	3.5 (6)	14.4 (25)	—	—	—	—	4.6 (8)	77.6 (135)	17.8 (31)	—	—

Figures in brackets denote the number of respondents.

None of the less modern respondents desired a single child, while 5 per cent of the more modern respondents did so. Two children were considered desirable by only 4 per cent of the former; in comparison, more than three-fourths (77.6 per cent) of the latter desired this number. About 33 per cent of the less modern reported three children as their desired family size as against only 18 per cent in the more modern group. None of the more modern respondents desired four children or more, while 40 per cent and 24 per cent of the less modern respondents reported four children and five children or more as their desired family size, respectively. Thus, more than three-fourths (77.6 per cent) of the more modern respondents desired only two children while nearly three-fourths (72.8 per cent) of the less modern respondents desired 3-4 children.

The high desired family size for the less modern respondents was evident, even after controlling the present age of wives. Among the less modern only one per cent of the 'younger' and 3 per cent of the 'older' respondents felt two children as desirable in comparison to 36 per cent of the 'younger' and 45 per cent of the 'older' respondents in the more modern group. Those who desired three children constituted 14 per cent and 19 per cent of the 'younger' and 'older' respondents in the less modern group respectively, in contrast to only 3 per cent of the 'younger' and 14 per cent of the 'older' respondents from the more modern group. None of the respondents from the more modern group reported four children or more as their desired family size while, 20 per cent of 'younger' and 44 per cent of the 'older' respondents from the less modern group stated four children, or five or more as their desired family size, respectively.

From these observations, it can be concluded that the desired family size was significantly higher in the case of the less modern than the more modern respondents.

### *Additional Family Size*

Additional family size indicates the number of additional children desired besides the existing children to the respondents. The less modern and more modern also differed in this regard.

About 63 per cent of the less modern respondents did not want any more additional children as against 87 per cent of the more modern respondents. One additional child was desired by 11 per cent of the latter in contrast to 8 per cent of the former. Nearly one-fourth (24.1 per cent) of the former also wished for two additional children as against only 1.2 per cent of the latter. None of the more modern group desired three or more additional children; 4 per cent of the less modern respondents however, did so.

Controlling for the present age of the respondents' wives, 12 per cent of the 'younger' and 51 per cent of the 'older' respondents from the less

**TABLE 4**  
**Percent distribution of respondents by level of modernisation and additional family size desired**

Level of modernisation	Ideal family size								Total					
	Present age of wife (years)													
	1	2	3	Upto God	No more	1	2	3	Upto God					
	≤ 29	30 +	≤ 29	30 +	≤ 29	30 +	≤ 29	30 +						
Less modern	12.07 (28)	51.29 (119)	4.74 (11)	3.45 (8)	15.95 (37)	8.19 (19)	1.72 (4)	2.16 (5)	0.43 (1)	63.36 (147)	8.19 (19)	24.14 (56)	3.88 (9)	0.43 (1)
Intermediate	22.16 (43)	53.61 (104)	14.44 (28)	4.12 (8)	4.64 (9)	1.03 (2)	—	—	—	75.77 (147)	18.56 (36)	5.67 (11)	—	—
More modern	29.31 (51)	58.05 (101)	9.77 (17)	1.73 (3)	0.57 (1)	0.57 (1)	—	—	—	87.36 (152)	11.49 (20)	1.15 (2)	—	—

**Figures in brackets denote the number of respondents.**

modern group stated that they did not wish to have any additional children as against 29 per cent of the 'younger' and 58 per cent of the 'older' respondents from the more modern group. Those who desired one additional child constituted 5 per cent of the 'younger' and 3 per cent of the 'older' respondents from the less modern group in contrast to 10 per cent and 2 per cent of the more modern respondents respectively. Two additional children were desired by 16 per cent of the 'younger' and 8 per cent of the 'older' respondents from the less modern group in contrast to less than one per cent of the more modern 'younger' and 'older' respondents. None of the latter wanted three or more additional children while about 2 per cent of the former did. From these findings it may be concluded that additional family size desired was significantly higher in the case of the less modern respondents than the more modern ones.

### **Summary and Implications**

The less modern respondents were found to have significantly high values for each of the four fertility indices examined namely, cumulative fertility, and ideal, desired and additional family size norms. The less modern respondents had about 1.64 live births more than their more modern counterparts. The majority (80 per cent) of the more modern respondents considered one to two children as ideal for their families; in contrast nearly 60 per cent of the less modern respondents opined that four to five children was an ideal family size. Interestingly, none of the less modern respondents stated one to two children as their ideal family size. A similar trend was observed when they were asked about their desire to have more children, with 64 per cent of the less modern group wanting four or more children. Further, in addition to their larger number of existing children, two additional children were desired by as many as one-fourth of the less modern respondents as against only 1.2 per cent of the more modern ones.

Modern values such as strong aspirations for higher education of both sons and daughters, less dependence on sons for economic support in old age through greater savings for future, greater belief in hard work than in destiny, equal treatment of sons and daughters, marriage for recreation rather than procreation etc., are to be promoted among the less modern people. This can be better achieved by developing appropriate educational programmes diffused through mass media particularly the cinema and television. The provision of free television sets to communities of low economic status would go a long way in realising this goal. Effective implementation of child labour acts would also increase the cost of raising a large number of children. Such measures would discourage high fertility in less modern communities.

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# **CHARACTERISTICS OF THE FAMILY AND FEMALE AGE AT MARRIAGE**

**MR. R.B. BHAGAT\***

## **Introduction**

Marriage leads to the formation of families which are central to the decision-making process which affects the social and economic lives of individuals. In India, the family wields considerable control over the marriage of its members. This is evident from the fact that the majority of marriages are arranged by parents and guardians. Mate selection, fixing the criteria for suitable partners, and taking decisions regarding the age and timing of marriages, are largely done by the family elders. Considering the importance of the family, the type of family is likely to affect the age at marriage of its members. In fact, several western scholars have agreed that the joint family system is associated with early marriage, and nuclear families with late marriage of females<sup>1-4</sup>.

Empirical studies to support this hypothesis are lacking in developing countries, and the few available studies seem to be faulty in nature. Nag<sup>5</sup>, Karim<sup>6</sup>, Karkal<sup>7</sup>, and Rao et al<sup>8</sup> have attempted to study the differentials in female age at marriage by family types. In all these studies, family type pertains to the present family of the husband of currently married women. The appropriate data in this regard should be the family type of the parents at the time of marriage of these women. Rao et al<sup>8</sup>, have admitted that this vitiates the findings on the relationship between family type and female age at marriage. Before going into the detailed aspects of such surveys, it was considered worthwhile to examine the available census data which have hardly been utilised so far.

## **Objective**

This study makes an attempt to explore the relationship between certain characteristics of the family such as female headship rate and family types, in relation to female age at marriage at the state level for India.

## **Data and Methodology**

Families can be broadly divided into two types—the joint and the nuclear

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family. In a joint family, apart from holding common property, and sharing a common kitchen and a common dwelling, more than one married relative live together. Families may be further classified into the collateral and lineal types, depending upon the number of generations it is composed of. When two or more married relations of the same generation live together, it is called a collateral joint family, and when two or more married relations belonging to two or more generations live together, it is termed as a lineal joint family. Contrary to this, the nuclear family is made up of a married couple and their children and unmarried relatives<sup>9</sup>.

Census data was used to measure the prevalence of family types. The census of India provides data on the members of the household, and their relationship to the head of the household under its social and cultural tables. These data may be meaningfully utilised for highlighting the prevalence of certain family types in both rural and urban areas. However, it is not possible to ascertain the number of households which are characterised as joint or nuclear; rather the information permits one to calculate certain estimates of the prevalence of family types which are as follows:

- 1) The number of currently married fathers and sons living together with the head of the household per thousand households, which represents the prevalence of lineal joint families.

- 2) The number of currently married brothers and other male relatives living with the head of the household per thousand households, which represents the prevalence of collateral joint families

- 3) The total number of currently married relatives living with the head of the household per thousand households. This is simply the addition of the lineal and collateral joint families and hereafter simply termed as joint family.

Since the census does not provide information on households where single married couples live independently, it is not possible to derive an estimate for the prevalence of nuclear families. However, it is important to mention that wherever the prevalence of joint families is higher, the prevalence of nuclear families will be low as these two types are by and large mutually exclusive. Despite the limitations, the above-mentioned measures of family types are meaningful for purposes of comparison at the state level, and certainly fulfill the objectives of the study.

In order to relate the measures of family types with female age at marriage, the singulate mean age at marriage was calculated, both for rural and urban areas, by applying the method developed by Hajnal<sup>10</sup>. Further, as the data on the members of the households in relation to the heads of households is not available for the 1981 census, the study was confined to the 1971 census.

## **Results and Discussion**

The above-mentioned measures of family types as calculated for rural



and urban areas of different states are presented in Tables 1 and 2 respectively, along with the singulate mean age at marriage. The female headship rate has also been included in the tables because it is an important characteristic of the family and is relevant from the point of view of marriage.

TABLE 1

Characteristics of the family and female age at marriage in rural areas by states, 1971

State	SMAM*	Female headship rate	Number of currently married male relatives living with the head of the household/per 1000 households		
			Father/Son	Brother/other male relatives	Total married male relatives
Andhra Pradesh	15.8	12.5	213	75	288
Assam	18.6	6.0	176	80	256
Bihar	15.1	8.3	371	64	435
Gujarat	17.9	8.1	301	68	369
Haryana	16.0	6.0	409	115	524
Himachal Pradesh	17.5	15.3	204	97	301
Jammu & Kashmir	17.2	5.9	257	164	421
Kerala	21.0	17.1	174	79	253
Madhya Pradesh	14.5	7.4	349	114	463
Maharashtra	16.6	11.0	242	93	334
Mysore (Karnataka)	17.3	13.1	220	117	337
Orissa	17.2	9.3	218	84	302
Punjab	19.8	7.2	289	75	364
Rajasthan	14.7	6.3	402	111	513
Tamil Nadu	19.3	14.6	147	46	193
Uttar Pradesh	15.0	7.2	390	164	554
West Bengal	17.2	7.7	196	79	274
India	16.7	9.6	282	105	387

\*Singulate mean age at marriage.

Source: Census of India, 1971, Series - I, Part II-C(ii) Social and Cultural Tables, pp. 7-69; Census of India, 1971, Series - I, Part-C(iii) Social and Cultural Tables, pp. 1-22.

Female headship may occur in two situations. First, when the society is matrilineal and women have the privilege of being the head of the household, and second, when the husband dies accidentally. In both situations, female headship is expected to be associated with higher age at marriage of females. In the first instance, women generally have a better position in society, and in the second, due to the absence of the husband, the mother may face difficulties in arranging the marriage of her daughter.

At the state level, as the tables indicate, the female headship rate is the highest in Kerala in both rural (17.1 per cent) and urban areas (18.5 per cent).

TABLE 2

Characteristics of the family and female age at marriage in urban areas by states, 1971

State	SMAM*	Female headship rate	Number of currently married male relatives living with the head of the household/per 1000 households		
			Father/Son	Brother/other male relatives	Total married male relatives
Andhra Pradesh	17.8	12.0	151	76	227
Assam	19.9	6.6	97	114	211
Bihar	17.1	5.5	257	17	274
Gujarat	19.7	9.6	208	89	297
Haryana	19.2	7.8	199	69	268
Himachal Pradesh	20.1	11.0	80	59	139
Jammu & Kashmir	20.0	6.2	224	129	353
Kerala	21.4	18.5	166	141	307
Madhya Pradesh	17.5	6.9	203	91	294
Maharashtra	19.5	8.5	157	142	299
Mysore (Karnataka)	19.3	11.8	165	97	262
Orissa	18.1	8.1	143	83	226
Punjab	20.7	8.1	209	63	272
Rajasthan	16.7	7.1	291	89	380
Tamil Nadu	20.1	12.0	116	63	179
Uttar Pradesh	18.3	5.7	244	114	358
West Bengal	20.2	7.4	161	186	347
India	19.2	8.8	180	111	291

\* Singulate mean age at marriage.

Source : Census of India, 1971, Series - I, Part II-C(ii) Social and Cultural Tables, pp. 7-69; Census of India, 1971, Series - I, Part-C(iii) Social and Cultural Tables, pp. 1-22.

After Kerala, the female headship rate is highest in rural Himachal Pradesh (15.3 per cent) followed by Tamil Nadu (14.6 per cent) and Karnataka (13.1 per cent). In the urban areas, Tamil Nadu and Andhra Pradesh occupy the next positions (each, 12 per cent) followed by Karnataka (11.8 per cent) and Himachal Pradesh (11 per cent). In the states of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh, the female headship rates are comparatively lower, and range from more than 5 per cent to less than 9 per cent in both rural and urban areas. The correlation co-efficients between female headship rates and the singulate mean age at marriage suggest that the two are positively associated both in rural and urban areas ( $r = 0.47$  in rural areas and  $0.49$  in urban areas;  $N = 17$ ). This indicates that marriages may be delayed when females head the household.

The tables also indicate that the prevalence of the joint family is higher in rural than in urban areas in most states, except Kerala and West Bengal.

In Kerala and West Bengal, where the population density per km. is the highest in the country<sup>2</sup>, economic pressures and the shortage of housing in urban areas may also compel people to prefer joint families. A higher prevalence of joint families in rural areas is simply because rural areas have a long tradition of agrarian societies. The highest prevalence of joint families is found in rural Uttar Pradesh followed by Haryana, Rajasthan, Madhya Pradesh and Bihar in that order, and the lowest in rural Tamil Nadu followed by Kerala, Assam, and West Bengal. In the urban areas, Rajasthan has the highest number of joint families, followed by Uttar Pradesh, Jammu and Kashmir and Kerala.

The tables also highlight the fact that in the rural and urban areas of most states, the lineal joint family (i.e. a joint family constituted by the father and sons) is more popular than the collateral one (i.e. a joint family constituted by the brother and other male relatives). This suggests that in the Indian situation, the relationship between fathers and sons seems to be more harmonious than that between brothers.

Correlating the singulate mean age at marriage (SMAM) with the prevalence of joint families showed that joint families are significantly negatively related to SMAM in the rural areas ( $r = -0.78$ ;  $N = 17$ ), but not in the urban areas ( $r = -0.24$ ;  $N = 17$ ). It has been mentioned earlier that the prevalence of joint families is relatively low in urban areas, and that preference for this family type may be attributed to other factors such as problems of housing. But, in rural areas, the prevalence of joint families is comparatively high, and also, such families are highly embedded in a wider network of kinship. In the joint family, several members live together and marriages of daughters are considered to be the joint responsibility of all members of the family. The wide network of kinship exerts pressure on the head of the household to arrange the marriages of the daughters of the family, and often, to extend economic support at the time of the marriage. Thus, the joint efforts on the part of the members and kin of joint families appear to facilitate earlier marriages of females, an aspect which is relatively lacking in nuclear families.

## Conclusion

The analysis of the characteristics of the family such as female headship rate and family type in relation to female age at marriage in rural and urban areas at the state level, reveals that female headship leads to a delay in the age at marriage of girls. The joint family type is associated with a lower female age at marriage in rural areas. However, in urban areas the relationship between the two is not significant at the state level. The association of a lower female age at marriage with a higher prevalence of joint family types in rural areas may be due to the fact that in the joint family, daughters are considered to be the joint responsibility of the members of the family. Also,

joint families are generally embedded in a wider kin network which provides economic support at the time of the marriage of the daughters of the family. Thus, the pressure exerted by the family members and the scope for easy mobilisation of economic support for marriages, which is relatively lacking among nuclear families, may contribute towards a lower age at marriage of girls in joint families.

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# **FACTORS AFFECTING DISCONTINUATION OF INJECTABLE METHODS IN BANGLADESH**

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## **Introduction**

Despite an early and strong commitment by the government to the family planning programme, Bangladesh has achieved modest success in increasing the level of contraceptive prevalence. For instance, the use of contraception has increased from 12.7 per cent in 1979 to over 25 per cent in 1985<sup>1</sup>. Besides government efforts, non-governmental organisations (NGOs) are also fairly active all over Bangladesh. According to surveys conducted at various times, the acceptance of the injectable method was not common and barely less than one per cent were using this method at the time of the 1985 Contraceptive Prevalence Survey(CPS)<sup>1</sup>.

The injectable method was first introduced in Bangladesh in 1975. Since then, the use of injectables has varied from one survey to another, the 1985 CPS showing barely one per cent use among currently married women. Acceptors of injectables in the government programme account for approximately 3 per cent of all users of contraceptives. The Third Five Year Plan projected an increase of the use of injectable contraceptives from 2.3 per cent in 1985-86 to 2.5 per cent in 1989-90.

The availability and accessibility of services are also important determinants of contraceptive practice, particularly in terms of method choice. Survey results also demonstrate that readily available family planning supplies and services increases their use. Women who can obtain the service at their door-step are more likely to use family planning.

Although some information is available about the characteristics of acceptors and the incidence of side effects of the injectable method, very little is known about the method in Bangladesh. Since it is simple to use, many women in developing countries prefer injectables to others methods of con-

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trapection. A single injection protects the woman for a relatively long period and its administration bears no relation to the timing of coitus. One of the important advantages of injectables is that its use can be kept a secret; the need for secrecy has been most commonly cited as the reason for choosing injectables by women in many developing countries<sup>2</sup>.

The side effects associated with injectables are predominately bleeding, amenorrhoea, irregular menses and such factors as nausea, headache and weight gain. Although studies of the effectiveness of injectables suggest that minor menstrual side effects are common, these problems pose no threat to health and can be managed effectively by follow-up services and medical back up. Communication between husband and wife regarding contraception is certainly a favourable, if not necessary condition for the adoption of any method. A discussion of methods often involves sexual matters. In many cultures sexual modesty or shyness inhibits a husband and wife from talking about sex at all<sup>3</sup>.

A man or woman may want to limit his or her family size or space the births of children, but may not practice any contraception because doing so violates his or her religious beliefs. The husband and wife may differ in their attitude towards the use of contraception. The relative lack of reference to the wife's opposition when the husband wishes to use contraception suggests that it is a less common reason than the husband's opposition to use a method when the wife so desires. The reasons for the husband's opposition vary depending upon the socio-cultural definition of the roles of men and women<sup>2</sup>.

Even when the husband and wife both want to use contraception or when the opposition of one of the spouses does not affect the motivation of the other, the couple may not be able to adopt any method because of opposition from others who wield influence on or control over the couple's reproductive behaviour.

## **Objectives**

The lack of knowledge about the efficiency of injectables in family planning and the characteristics of injectable users, and the reasons for discontinuation are important constraints in the formulation of contraceptive strategies. The purpose of this paper is to investigate the characteristics of users of injectables and to identify the factors that lead to the discontinuation of the method.

## **Data Source and Methodology**

The study sample was drawn from both government and non-governmental clinics. A total of 30 clinics i.e. twenty government clinics/centres and ten non-governmental clinics, was selected. While the highest performing 10 programme centres from among the non-governmental organisations

were selected, the governmental clinics were selected as follows. All government clinics in all the upazilas which reported their performance to the Management Information System (MIS) Cell of the Ministry were considered. A list of the upazilas on the basis of their January - June 1986 performance was prepared in ascending order, and the upazilas were categorised into low and high performance upazilas. Upazilas achieving less than 100 per cent of their target were defined as low performance upazilas, and those achieving over 100 per cent of their target were defined as high performance upazilas. Upazilas, achieving less than 50 dosages of injectables among the low performance upazilas were excluded from the study sample.

For the purpose of sampling, a recorded acceptor of injectables was defined as an eligible couple who, according to clinic records, had accepted injectable contraception from any of the selected service outlets during the reference period, January - June, 1986. The samples drawn from government and non-government areas were in the ratio of 2:1. In order to reach a target sample of 1000, the sample size of clients was considered as 1270 (850 in the government areas and 420 in the non-government areas).

Only 868 clients were successfully interviewed (592 in the government areas and 276 in the non-government areas). The overall non-response rate was about 32 per cent. Table 1 shows that in both the government and the non-government areas, the most common reason for non-response was the absence of the respondent at the given address.

TABLE 1

## Reasons for non-response by area (%)

Reasons	Government (N=258)	NGO (N=144)	Total (N=868)
Partial interview and false*	4.7	—	3.0
Refused	5.4	1.4	4.0
Absent	21.3	28.5	23.9
Change of address	5.8	29.1	14.2
Full address and not found**	36.4	29.2	33.8
Incomplete address and not found***	26.4	11.8	21.1

\* The respondent was interviewed on the basis of the clinic records, but on verification, it was found that she was not an injectable client.

\*\* The respondent could not be located inspite of obtaining the complete address from the clinic.

\*\*\* The clinic records were incomplete. As a result, the respondent could not be located.

The second most common reason for non-response in the government area was incomplete address (26.4 per cent) while in the non-government area, the reasons related to change of address (29.1 per cent) and failure to

locate the client inspite of obtaining her complete address from the clinic (29.2 per cent). This large non-response may have implications on the findings of the study.

## Results

### *Characteristics of the respondents*

The socio-economic characteristics of the respondents such as their education, religion, land ownership and occupational status are of particular interest in understanding their family planning behaviour.

Table 2 shows that over two thirds of the respondents were in the age group of 25-34 years; and only 14 per cent were under 25. The mean age of the acceptors from non-government (29.3 years) and government areas (30.4) did not differ significantly.

TABLE 2

#### Socio-demographic characteristics of respondents

Characteristics	Government (N=592)	NGO (N=276)	Total (N=868)
<i>Age</i>			
<25	11.5	18.5	13.7
25-34	70.4	62.7	68.0
35+	18.1	18.8	18.3
Mean age (in years)	30.4	29.3	29.9
<i>Wife's education</i>			
No schooling	62.8	51.8	59.3
1-5 years	23.5	27.2	24.7
6-8 years	5.9	9.4	7.0
9-10 years	6.3	8.3	6.9
11+ years	1.5	3.3	2.1
<i>Husband's education</i>			
No schooling	34.1	32.3	33.5
1-5 years	19.6	14.5	18.0
6-8 years	14.2	12.0	13.5
9-10 years	21.8	23.2	22.2
11-12 years	7.3	9.0	7.8
13+ years	3.0	9.0	5.0
<i>Occupation of clients</i>			
Household work	94.3	88.4	92.4
Agricultural work	0.2	—	0.1
Services	4.2	4.0	4.2
Skilled labour	—	0.3	0.1
Others	1.3	7.3	3.2



TABLE 2 (Contd.)

Socio-demographic characteristics of respondents			
Characteristics	Government (N=592)	NGO (N=276)	Total (N=868)
<i>Occupation of the husband</i>			
Agriculture	24.7	1.11	7.2
Agricultural labour	13.9	0.7	9.7
Skilled labour	7.2	4.0	6.2
Business	3.0	6.5	4.1
Services	26.4	33.0	28.5
Others	24.8	54.7	34.3
<i>Number of children ever born</i>			
0	0.5	—	0.3
1	4.2	11.6	6.6
2	14.7	19.5	16.2
3	19.4	23.2	20.6
4	21.6	19.2	20.9
5	16.8	10.9	14.9
6+	22.8	15.6	20.5
Mean	4.1	3.3	3.9
<i>Number of living children</i>			
0	0.7	0.4	0.6
1	4.9	12.7	7.4
2	17.6	26.8	20.5
3	23.1	22.5	22.8
4	23.3	18.8	21.9
5	15.9	10.1	14.1
6+	14.5	8.7	12.7
Mean	3.7	3.1	3.5
<i>Number of additional children</i>			
1	54.0	71.7	61.8
2	43.6	27.3	36.4
3+	2.4	1.0	1.8
Mean	1.5	1.3	1.4
N	126	99	225
Total desired family size	5.2	4.4	4.9

More than 59 per cent of the respondents were illiterate (Table 1). About 25 per cent had received primary level education and a little over two per cent had higher secondary or higher education. Further, a higher proportion of respondents from non-government areas were literate (45 per cent) as compared to those from government areas (37 per cent)—it may be noted here that the former were from urban areas while the latter (government areas) were from rural areas. As compared to the respondents, about a third of their

husbands were illiterate, with a little difference between non-government (32.3 per cent) and government (34.1) areas. Again, the percentage of husbands who had received primary (or more) education was higher in the non-governmental areas as compared to government areas.

The economic status of a person is generally determined by his/her occupational involvement. About 7.8 per cent of the respondents were involved in various income-earning activities (Table 2). Respondents from government areas were less economically active than those from non-government areas. Among working women, 4.2 per cent were in service. It may be argued that when motherhood is highly valued in relation to employment, women may be discriminated against in the labour market and the status of working women will be low. This situation would encourage women to have large families. On the other hand, if work brings status and economic independence to women, they may avoid having large families<sup>4</sup>. Among the husbands, 29 per cent were involved in business or trading activities; services being the second most common occupation (23.1 per cent). In general, the husbands of acceptors of the injectable method were found to belong to the lower income strata.

Table 2 also shows that only 7 per cent of the respondents had one child at the time of survey. The average number of children ever born was high with about four children per respondent, suggesting little impact of contraception. Similarly, the average number of children per respondent was 3.5; with lower averages of ever born and living children in non-government areas as compared to government areas. This difference could be the result of not only the definitional attribute of the sub-groups but also the compositional variations of other characteristics among the groups.

One obvious reason why the majority of couples in less developed countries do not use any contraception is that they want more children than they have. Family size norms may have a programmatic value to the extent that the decision to adopt contraception is influenced partly by individual family size norms. A married couple may not adopt contraception until they have reached their desired family size, and if they do, it is very likely that they will adopt a temporary method for the purpose of spacing rather than terminating their reproduction. The present data suggest that only 26 per cent of the respondents wanted additional children. The average number of additional children desired was 1.4, and the total desired family size was almost 5 children.

#### *Contraceptive Use Status Prior to Method Acceptance and Reasons for Changing Over to Injectables*

A little over 44 per cent of the respondents reported to have used a family planning method prior to the acceptance of injectables. Among the contracep-

tors, pill users constituted as much as 79.5 per cent; condom and IUD users, 9.6 and 9.1 per cent respectively, while the rest (1.8 per cent) used other conventional methods.

There was a pronounced area-wise variation in the case of the pill and IUD. In the rural areas (government), the percentage of IUD and condom users was higher as compared to that in urban areas (about 11 per cent as compared to 6 per cent, for both methods), while the percentage of pill users in the urban, NGO areas was higher (83.3 per cent) than that in the rural areas (77.2 per cent). The condom was more or less equally used prior to the change-over to injectables with 9.9 per cent users in rural (government) and 9.0 in urban (NGO) areas; other methods had been used by 2.1 and 1.4 per cent of the respondents in the two areas respectively.

The most common reason for switching over from the pill to injectables was that it was easy to use (54.9 per cent); nausea and giddiness were mentioned by 34.0 per cent of the pill users (Table 3).

TABLE 3

*Percentage distribution of respondents by reasons for switching over to injectables*

Reason(s) for Switching over method	Pill (N=306)	Condom (N=37)	IUD (N=35)
Amenorrhoea	1.3	—	—
Spotting	3.3	—	21.4
Pain in abdomen	0.9	—	37.1
Nausea giddiness	34.0	—	—
General weakness	12.4	—	—
Burning headache	10.8	27.0	28.6
Simple to use	54.9	70.3	14.3

The total may not add up to 100 per cent because of multiple responses.

It is difficult to assess the degree of bias in the reporting of side effects. Women who use the pill are likely to be more concerned about their health and hence are more prone to report general health problems than non-users. IUD users who had switched over to injectables had done so largely because of pain in the abdomen (37.1 per cent), spotting (21.4 per cent), burning sensation and headache (29 per cent). Many studies have indicated that women experience increased bleeding and pain in the pelvic area immediately following the insertion of IUDs. Although these side effects subside in most users within a month or two, increased menstrual flow often twice the usual level, has been found to be a regular feature among IUD users<sup>6</sup>.

About half (49.3 per cent) of the respondents had chosen injectables because it had fewer side effects. About 40.6 per cent mentioned that injectable methods provide 90 days of complete protection from unwanted pregnan-

cy; and 8.8 per cent stated that they preferred injectables because other methods are associated with side effects. Among other reasons for preference of injectables were that it could be taken 'secretly' (stated by 1.1 per cent) and because the doctor had suggested it (0.2 per cent).

#### *Use Status at the Time of Interview*

At the time of interview only 61.3 per cent of the respondents were using injectables and about 24 per cent were using other methods of contraception such as the pill, condom and IUD. Nearly 15 per cent were not using any method of contraception.

#### *Reasons for Discontinuation*

With a few exceptions, the most common reason for discontinuing the use of injectable contraceptives was disturbance of menstrual bleeding (Table 4).

TABLE 4

Percentage distribution of drop-outs by reasons for discontinuation

Reason for discontinuation	Per cent (N = 336)
Amenorrhoea	20.2
Spotting	38.7
Burning sensation, headache and abdominal pain	13.7
Nausea, giddiness, weakness	22.9
Switched to other method	3.3
Lack of supply	14.9
Planned pregnancy	5.1
Other	7.2

The percentages may not add to 100 per cent because of multiple responses.

The discontinuation of a method because of its disruptive effect on the menstrual cycle is, in some cases, related to the perceived consequences on the health of the user. But, more importantly, in many societies, this disruption of the menstrual cycle is a matter of concern because social belief systems surrounding menstruation impose various behavioral restrictions on menstruating women<sup>2</sup>. These include prohibition of sexual intercourse, praying and visiting religious places. The non-use of contraceptives which prolong menstruation is expected to be higher among cultural groups which traditionally impose greater behavioural restrictions on menstruating women.

The absence of menstruation (amenorrhoea) may give rise to the fear of loss of fertility or ageing in some women, while in others, it may produce anxiety of an unwanted pregnancy. On the other hand, increased bleeding

is also seen as harmful and weakening, a fear that has some basis where anaemia is a common problem among women of childbearing ages<sup>1</sup>.

Although the physical, psychological and social concomitants of menstrual bleeding are generally seen in a negative light, many women do not want either more or less bleeding than usual. There are widespread perceptions and beliefs about potential health hazards based on ethnic concepts of anatomy and physiology. These perceptions and beliefs may be scientifically invalid but they often constitute important reasons for non-use of contraceptives.

Other side effects, though not uncommon were not usually given as reasons for discontinuing injectable contraception, and also were not necessarily regarded as a disadvantage. For example, weight gain. Some of the other reasons which were frequently quoted for discontinuing injectables are self-explanatory and are commonly given as reasons for discontinuing other methods of contraception as well. These included the desire for a further pregnancy, a change over to another method or 'no further need for contraception'.

Proper counselling and poor follow up services are also important for the continuation of a method. The survey revealed that 78 per cent of the respondents had talked to the family planning worker about the possible side effects of the injectable method, prior to its acceptance. This suggests that most of the respondents were well-informed about the side effects associated with injectables.

Another important cause of discontinuation was interruption in the supply of injectables. Shortages in supplies resulting from logistic and management difficulties is compounded by the shortage of trained staff in rural areas. A further difficulty encountered in some areas particularly when the distribution of injectables is restricted to trained health workers in particular centres, is the failure of women to attend the centre at the right time for repeat injections. Sometimes, this is due to their inability to keep track of dates correctly, but it may also be due to unavoidable external factors.

### **Discussion and Conclusion**

Users of injectable contraception are generally poor and illiterate; a characteristic which many of these women share is that they are among the most disadvantaged groups. They are most poorly served by health and social services.

In this study, most of the respondents had been motivated to opt for injectable contraception by their neighbours, friends or relatives who were already using it. Injectables were chosen in preference to other methods of contraception either because of specific advantages or because other methods were found to be unsatisfactory in some way. Injectable methods provide a highly acceptable alternative to these methods and are highly effective in

preventing pregnancy. However, they were found to cause significant menstrual disturbances in the majority of users, and this was the most common reason given by the respondents for discontinuing injectables.

Regular and normal menstruation is widely regarded as a sign of continuing health and fertility. Although the disturbances associated with injectables rarely pose any threat to health, they are likely to give rise to anxiety. Irregular or prolonged bleeding causes problems for women in societies in which the activities of menstruating women are culturally restricted, such as among Muslims and Hindus. The quality of counselling and follow up services would therefore be major factors in determining the duration of use of the method. Another important factor in the discontinuation of injectable contraception is the difficulty of getting re-supplies. This may result from logistic and management problems. Other reasons frequently quoted by drop-outs such as a desire for a further pregnancy, change over to another method, or no further need for contraception, were common to those given by drop-outs of other methods as well.

In conclusion, it can be said that injectables are particularly popular among some of the most disadvantaged women. There are two major problems associated with the use of injectable methods. First, menstrual disturbances are both frequent and significant, and are the dominant reason for women giving up the method. However, the effects of these disturbances can be minimised through better counselling. Secondly, interruptions in re-supply of injectables commonly occur and also result in discontinuation. For those who wish to continue with the method, re-supplies must be ensured through their availability in clinics, and if necessary, through the training of field workers.

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# **HINDU-MUSLIM DIFFERENTIALS IN FAMILY SIZE IDEALS BY SOCIO-ECONOMIC STATUS**

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**and**

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## **Introduction**

The relatively larger family size ideals held by the Muslims, the largest minority community of India, as compared to the Hindus, the majority community of the country, have been consistently revealed by demographic surveys including those conducted in Uttar Pradesh.<sup>1</sup> This differential underlies the relatively lower acceptance of family planning by the Muslims as compared to the Hindus, and has usually been attributed to the relatively lower socio-economic status of the former. In order to examine this issue, it is necessary that Hindu-Muslim differences in respect of family size ideals are investigated after controlling for the socio-economic development of the area as well as of the study cases. With this in view, the present paper seeks to analyse the responses of the two communities in a Primary Health Centre area in central Uttar Pradesh after controlling for the influence of individual level socio-demographic and economic variables.

## **Data and Methodology**

The study is based on a reanalysis of data collected from 1256 women in their childbearing years - 1152 Hindus and 104 Muslims, in the course of a field investigation on maternal and child health care patterns and family size motivations in rural Uttar Pradesh. The study was carried out in Sikan-darpur Karan PHC, in Unnao district in Central Uttar Pradesh, between November 1984 and February 1985. The sample consisted of mothers who had given birth to a child during a particular year, namely 1982-83. Therefore, the representation of younger and more fertile women was greater in the sample as compared to older women. The responses on the question of the number of children considered as ideal could be received only from 1028 Hindu and 56 Muslim cases.

The influence of socio-demographic and economic status was controlled by cross-classifying the responses by age of the respondent, literacy status

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of the respondent and her spouse, husband's occupation, total and per capita family income, type of housing and family status. The significance of the difference in proportions considering a particular number of children as ideal was tested by the 'z' test and the significance between the difference of means by the 't' test.

## Results and Discussion

### *Socio-demographic Differentials*

#### *Age*

The age of the woman influences her attitude to family size ideals. Younger women are expected to be more amenable to modernising influences, while older ones are likely to be more traditional in their attitudes. Table 1 presents the findings of the study distributed into two age groups only, namely, below 30 years, and 30 years and over, so that the number of Muslim respondents in each age group is not too small.

TABLE 1

**Ideal family size by religion and age of female**

Respondent's age and religion	Number of respondents	Number of children considered as ideal				
		Two or less	Three	Four	Five or more	Mean
(% distribution of cases)						
30 years						
Hindu	656	9.9	59.8	27.3	3.1	3.24
Muslim	33	0.0	39.4	48.5	12.1	3.73
30+ years						
Hindu	365	4.7	43.6	34.8	17.0	3.68
Muslim	23	4.4	34.8	30.4	30.4	4.04

Table 1 shows that the proportion of women who considered four or more children as ideal was markedly higher among the Muslims than the Hindus in both younger (60.6 per cent and 30.4 per cent respectively) as well as older (60.8 per cent and 51.8 per cent respectively) age groups. It was nearly the same among younger and older Muslim women, and considerably lower among younger Hindu women as compared to their older counterparts. The difference in proportion within the two communities was highly significant ( $z = 3.73$ ;  $P < 0.001$ ) in the case of younger women, but not so in the older age group ( $z = 0.84$ ).



The number of children considered as ideal was also larger among the Muslims than the Hindus in both the age groups. As in case of those considering four or more children as ideal, the difference in the mean ideal number of children was also highly significant statistically ( $t = 4.02$  at 99.9 per cent level of confidence) in the younger age groups but not in older age groups ( $t = 1.77$ ).

The above findings bring out that while family size ideals of older women in the two communities are not significantly different, they become so in the younger age groups, possibly because younger Hindu women have shown a greater amenability to change than their Muslim counterparts.

### *Husband's Education*

The education of the male is expected to influence the number of children considered to be ideal by the couple. In view of the nature of the rural sample, the differences between the communities were analysed under two categories, namely 'literate' and 'illiterate' in terms of the husband's literacy status.

TABLE 2

Ideal family size by literacy status of husband

Literacy status and religion	Number of respondents	Number of children considered as ideal				
		Two/less	Three	Four	Five or more	Mean
(% distribution of cases)						
<i>Illiterate</i>						
Hindu	350	4.3	47.1	37.7	10.9	3.58
Muslim	35	2.9	42.9	37.1	17.1	3.80
<i>Literate</i>						
Hindu	674	9.8	58.0	26.0	6.2	3.30
Muslim	21	0.0	28.6	47.6	23.8	3.95

A larger percentage of Muslim than Hindu husbands considered four or more children as ideal in both illiterate and literate categories. In the former, this percentage was 54.2 among Muslims and 48.6 among Hindus, while in the latter, the corresponding percentages were 71.4 and 32.2. Thus, while a markedly lower number of Hindu literate as compared to illiterate husbands considered four or more children as an ideal family size, more Muslim literate than illiterate husbands, favoured this ideal family size. The results were significant between the two communities in the literate category ( $z = 3.90$ ;

$P < 0.001$ ) but not in the illiterate category ( $z = 0.55$ ). The findings suggest that possibly due to cultural factors, the literacy level of the husband does not reduce family size ideals among the Muslims; rather it appears to increase it thereby aggravating the difference through reduction of family size ideals among the Hindus.

The mean ideal number of children was also higher among the Muslims than the Hindus in both illiterate (3.80 versus 3.58) and literate groups (3.95 versus 3.30). Even among the former, this figure was higher among literate Muslims than illiterate ones, while among the Hindus the corresponding mean was lower. Therefore, the inter-community difference in this case, too was statistically insignificant ( $t = 1.45$ ) in the illiterate category but highly significant in the literate category ( $t = 3.78$ ). It supports the finding noted above that education does not reduce family size ideals among the Muslims, rather it aggravates Hindu-Muslim differences by increasing these ideals.

### *Education of the Woman*

The educational status of the woman is expected to have an effect on her perception of ideal family size and has been found in earlier studies to have a larger negative influence on family size ideals than in the male. Table 3 presents the analysis of family size ideals by literacy status of the female.

TABLE 3

Ideal family size by religion and literacy status of female

Literacy status/ religion	Number of respondents	Number of children considered as ideal				
		Two or less	Three	Four	Five or more	Mean
(% distribution of cases)						
<i>Illiterate</i>						
Hindu	762	5.6	51.2	34.9	8.3	3.48
Muslim	46	2.2	30.4	45.7	21.7	3.96
<i>Literate</i>						
Hindu	363	14.8	62.7	15.2	7.2	3.17
Muslim	10	0.0	70.0	20.0	10.0	3.40

Larger proportions of both the illiterate and literate respondents among Muslims (67.4 per cent and 30.0 per cent respectively) considered four or more children as ideal as compared to their Hindu counterparts (43.2 per cent and 22.4 per cent respectively). However, unlike the case of male literacy, the difference was statistically significant in the illiterate ( $z = 3.17$ ;  $P < 0.01$ )

and not in the literate category ( $z = 1.42$ ). Thus, given the limitation of a small sample of literate Muslim women, the finding suggests that among Muslims, unlike male literacy, the literacy level of the female does seem to reduce the number of children considered as ideal.

The mean ideal number of children as expressed by the Muslim respondents was also higher than that stated by the Hindu respondents in both illiterate (3.96 versus 3.48) and literate (3.40 versus 3.17) categories. However, the difference in this case was statistically significant in the illiterate ( $t = 4.0$ ;  $P < 0.001$ ) and not the literate category ( $t = 0.88$ ), supporting the above finding of a negative influence of female education on family size ideals even among the Muslims.

### ***Economic Differentials***

#### ***Occupation of the Husband***

Table 4 presents the findings on the differences in family size ideals among the two communities by three main occupational categories of the respondents' husbands.

TABLE 4

Ideal family size by religion and husband's occupation

Occupation/ religion	Number of respondents	Number of children considered as ideal				
		Two or less	Three	Four	Five or more	Mean
(% distribution of cases)						
<i>White collar Work &amp; Business</i>						
Hindu	149	12.1	69.1	13.4	5.4	3.14
Muslim	7	14.3	42.9	0.0	42.9	3.71
<i>Farmers</i>						
Hindu	444	6.8	53.6	29.7	9.9	3.46
Muslim	17	0.0	29.4	41.2	29.4	4.24
<i>Manual Labour</i>						
Hindu	296	7.1	48.7	37.8	6.4	3.45
Muslim	15	0.0	26.7	53.3	20.0	3.94

In each occupational group, a greater number of Muslim respondents considered four or more children as ideal as compared to Hindu respondents. In the white collar and business category, 42.9 per cent of the former as against only 18.8 per cent of the latter; in the farmers' category, 70.6 per cent of the former as against only 39.6 per cent of the latter; and in the manual labour category, 73.3 per cent of the former as compared to only 44.2 per cent of

the latter, considered four or more children as ideal. These differences were statistically significant in the farmers' ( $z = 2.54$ ;  $P < 0.05$ ) and in the manual labour categories ( $z = 2.20$ ;  $P < 0.05$ ), but were not significant in the white collar and business category ( $z = 1.55$ ).

The Muslim respondents in each occupational group also expressed higher mean ideal family sizes than the Hindu respondents. The differences were statistically significant among all the three categories ( $t = 2.02$  for the white collage and business category;  $t = 3.76$  for the farmers' category; and  $t = 2.47$  for the manual labour category). In general, the findings show that except for white collar employment perhaps, occupational status did not have any marked depressing influence on the family size motivation of Muslim respondents so as to reduce inter-community differences in family size ideals.

### *Family Income*

Family income levels, expected to exercise a depressing influence on family size ideals, were studied by analysing the family size ideals of the two communities in relation to two monthly income groups, below Rs. 500/- and Rs. 500/- and above.

TABLE 5

#### **Ideal family size by religion and family income**

Income/ religion	Number of respondents	Number of children considered as ideal				
		Two or less	Three	Four	Five or more	Mean
(% distribution of cases)						
<i>Below Rs. 500/—</i>						
Hindu	675	7.6	53.2	30.8	8.4	3.42
Muslim	39	2.6	35.9	46.2	15.4	3.85
<i>Rs. 500/— and above</i>						
Hindu	352	8.5	56.0	28.4	6.8	3.34
Muslim	17	41.2	41.2	29.4	29.4	3.88

Table 5 indicates that in both income groups, a larger proportion of the Muslim respondents considered four or more children as ideal. In the lower income group of below Rs. 500, 61.6 per cent of Muslims as compared to only 39.2 per cent of Hindu respondents expressed this view as compared to 58.8 per cent and 35.2 per cent respectively among those with a monthly family income of Rs. 500 or more. These differences were statistically significant in the lower ( $z = 2.85$ ;  $P < 0.01$ ) as well as the higher  $z = 3.20$ ;  $P$

<0.01) income groups. Further, the differences between the two communities were relatively larger in the higher income category.

The mean number of children considered as ideal was also higher among both income groups for Muslim respondents as compared to Hindu respondents. These differences were significant in the under Rs. 500 group ( $t = 3.07$ ;  $P < 0.01$ ) and the over Rs. 500 income group ( $t = 2.31$ ;  $P < 0.05$ ), indicating that the income level of the family does not significantly reduce family size ideals among the Muslims so as to reduce the differences between the two communities.

### *Per Capita Income*

Another measure of income level, namely, per capita income is also expected to exert a negative influence on family size ideals. In order to determine whether a higher per capita income level can reduce inter-community differences, ideal family size as expressed by the respondents was analysed in relation to two per capita income levels.

TABLE 6

#### *Ideal family size by religion and per capita income*

Per capita income (Rs.)/ religion	Number of respondents	Number of children considered as ideal				
		Two or less	Three	Four	Five or more	Mean
(% distribution of cases)						
<i>Below Rs. 60/—</i>						
Hindu	530	5.1	53.0	32.5	9.4	3.49
Muslim	35	2.9	34.3	45.7	17.1	3.88
<i>Rs. 60/— and above</i>						
Hindu	496	11.1	55.4	27.2	6.3	3.29
Muslim	21	0.0	42.9	33.3	28.8	3.81

The findings presented in Table 6 reveal that irrespective of the level of per capita income, more Muslim than Hindu respondents perceived four or more children as ideal. Among families with a per capita income less than Rs. 60, 62.8 per cent of Muslim and 41.9 per cent of Hindu respondents favoured this family size, as against 57.1 per cent and 33.5 per cent respectively in families with a per capita income of Rs 60 and above. The difference was significant in both groups ( $z = 2.33$  and  $2.28$ ;  $P < 0.05$ ). Moreover, the difference was relatively larger in the higher per capita income category.

The mean number of children considered ideal among the Muslims was

also higher among both the per capita income categories. The difference of the means was statistically significant in the higher per capita income category ( $t = 3.17$ ;  $P < 0.01$ ) but not in the lower per capita income category ( $t = 1.63$ ) implying that the higher per capita income did not have a depressing influence on family size ideals among the Muslims so as to reduce differences in this regard between the two communities; rather it appeared to aggravate the difference.

### *Housing*

The housing situation of the respondents is an indicator of their economic condition and is expected to influence their family size ideals. Therefore, the number of children considered ideal was analysed with respect to the construction material used for building their houses. In order to obtain a sizeable number of cases of Muslim respondents in both groups, the 'pacca' and 'kachcha' housing groups were combined for the analysis; the other group was that of thatched houses.

TABLE 7

**Ideal family size by religion and housing situation**

Type of house/ religion	Number of respondents	Number of children considered as ideal				
		Two or less	Three	Four	Five or more	Mean
<i>Pacca &amp; Kachcha</i>						
Hindu	775	9.3	56.1	27.2	7.4	3.33
Muslim	36	0.0	41.7	41.7	16.7	3.87
<i>Thatched</i>						
Hindu	253	4.0	47.8	38.3	9.9	3.58
Muslim	20	5.0	30.0	40.0	25.0	3.85

The findings indicated that more Muslim than Hindu respondents in both groups considered four or more children as ideal. The difference was statistically significant in 'pacca' and 'kachcha' category ( $z = 2.67$ ;  $P < 0.01$ ), but not in 'thatched' category ( $z = 1.46$ ). The difference between the communities was also larger in the better housing category.

In both groups, Muslim respondents had higher family size ideals. The difference in means was also significant in the 'pacca' and 'kachcha' category ( $t = 3.60$ ;  $P < 0.001$ ), but not in the thatched category ( $t = 1.5$ ). This suggests that while the Muslim respondents who live in thatched houses or in poorer conditions hold a higher, though not significantly higher family size

ideal than the corresponding Hindu respondents; the difference between communities becomes significant when economic conditions are relatively better. This implies that while better economic conditions exercise a depressing influence on family size ideals of the Hindus, they do not do so in the case of Muslims possibly due to cultural factors.

### *Family Status*

Family status, as determined by the ownership of durable household assets, was analysed in relation to family size ideals and is presented in Table 8. In order to have a sizeable number of cases of Muslim respondents in each status group, the higher status group was combined with the middle status group.

TABLE 8

#### *Ideal family size by religion and family status*

Family status/ religion	Number of respondents	Number of children considered as ideal				
		Two or less	Three	Four	Five or more	Mean
<i>Lower</i>						
Hindu	284	7.0	50.7	31.7	10.6	3.48
Muslim	20	5.0	30.0	50.0	15.0	3.85
<i>Middle &amp; Higher</i>						
Hindu	736	8.4	55.6	28.9	7.1	3.36
Muslim	36	0.0	41.7	36.1	22.2	3.86

In both status groups, more Muslim respondents considered four or more children as ideal. In the lower status group, 65.0 per cent of Muslim respondents as compared to 42.3 per cent Hindu, and in the 'middle and higher' status group, 58.3 per cent of Muslim respondents as against 36.0 per cent Hindu, preferred this ideal. This difference was statistically significant both in the 'middle and higher' status group ( $z = 2.75$ ;  $P < 0.01$ ) as well as lower status group ( $z = 1.98$ ;  $P < 0.05$ ).

Muslim respondents of both status groups expressed a higher mean ideal number of children. However, while this number among higher status Hindus was lower than among lower status Hindus, the corresponding number was marginally higher among Muslims. Therefore, the Hindu-Muslim difference in the ideal mean number of children in the lower status group ( $t = 1.95$ ) was not significant at the 5 per cent level; it was significant in the

'middle and higher' status group ( $t = 3.53$ ;  $P < 0.001$ ). Thus, possibly the lack of any negative influence of higher family status on the number of children considered ideal among the Muslims and the presence of such an influence among the Hindus makes the difference between the two communities significant in families with a higher status.

### **Limitations of the Study**

Some limitations of the present investigation need to be noted. Since the sample is heavily weighted towards younger ages and the analysis by age of the woman shows larger Hindu-Muslim differentials at these ages, no attempt should be made to derive overall Hindu-Muslim differentials in regard to family size motivation, from the findings of the present paper, as it would mean an overstatement of the differentials. Moreover, the sample size for the Muslim community (104) is quite small; this has been further reduced on cross-classification into different demographic and socio-economic categories. Further, although the non-response rate on the characteristics used for classifying the two communities is confined to the Hindus and is only marginal, the non-response rate on the number of children considered as ideal is larger and is particularly so in the case of the Muslims (46.2 per cent as compared to the Hindus 10.8 per cent). Such a high degree of non-response on the question of family size motivation among the Muslims could have created selectivity biases in the data. In view of these limitations, there is a need to repeat the study on a larger sample and to reduce the non-response rate to arrive at more convincing findings.

### **Conclusions**

Within the limitations of the present investigation, the findings reveal that among all the socio-demographic and economic groups, Muslim respondents considered a relatively larger number of children as ideal for their families as compared to Hindu respondents. This finding contradicts the commonly given explanation which attributes higher family size ideals among the Muslims to their lower socio-economic status. Further, the differences between the two communities, in general, are seen to be relatively smaller among the lower socio-economic strata and larger among the higher socio-economic strata. This is possibly due to the fact that the higher socio-economic level did not exercise any significant depressing influence on family size ideals among the Muslims in the study area, while it did so among the Hindus, thereby aggravating the Hindu-Muslim differences in this regard at the higher socio-economic level.



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# **TRADITIONAL BIRTH ATTENDANTS: PRESENT STATUS IN THE FAMILY WELFARE PROGRAMME IN AN URBAN SLUM AND VILLAGES OF DELHI**

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## **Introduction**

In India a large number of deliveries are conducted by traditional birth attendants. In most cases, the traditional birth attendant also helps the mother with her household chores after the delivery, and hence is a close confidante of the post-partum mother. She is therefore in a position to impart family planning advice effectively and to influence the mother to space or limit her family.

The present study aims at assessing the current status of the traditional birth attendant and her contribution to the family welfare programme, with a view to utilising her services more effectively for promoting the programme.

## **Sample and Methodology**

Twentyfive traditional birth attendants who conducted deliveries but had not received any formal training, were the respondents of this study.

The study was carried out over a one-year period from November 1984 to November 1985 in a slum and four villages of Delhi. The former was a slum-cum-resettlement colony, Ambedkar Nagar & J.J. Camp, which had a population of 29,000 and 13 functioning traditional birth attendants, while the latter was a cluster of four villages viz. Begumpur, Khirki, Shahpur Jat and Savitri Nagar of Delhi, with a total population of 17,179 and 12 traditional birth attendants.

One hundred and sixteen post-natal mothers (92 from the slum area and 24 from the villages) were also interviewed to determine whether any family planning advice had been given to them by the respondents. In a few cases, the investigator accompanied the respondents on their post-natal visits to observe if any such advice was being given.

A prestructured and pretested proforma was used to assess the awareness and knowledge levels of the respondents regarding family planning methods,

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termination of pregnancy, and the management of infertility. Their suggestions to make family planning more acceptable were also recorded.

The results for the two areas were similar and have therefore been combined and are presented below.

### Results

All the 25 traditional birth attendants (respondents) in the study area were illiterate, married, and had borne children. They belonged to the lower socio-economic stratum (Kuppuswamy's Scale), and had no formal training in conducting deliveries. They claimed to have been influenced or trained by a close female relative to take up the occupation. Almost all (24) were over 35 years of age, 14 (56 per cent) were over 45 years. Most of them (22 of the 25) were Hindu and three fifths belonged to scheduled castes. The rest (three) were Muslim.

The study area had 0.54 traditional, untrained birth attendants per thousand population as compared to 0.11 trained birth attendants per thousand population. During the study period, the 13 respondents working in the slum area had conducted 83.6 per cent of the deliveries in their area, and the 12 respondents functioning in the villages had covered 16.2 per cent of the deliveries in their area of work. Most of the mothers, and especially those in the slum area, preferred home deliveries performed by a traditional birth attendant because she was accessible, the delivery was economical and the house was not neglected.

Sterilisation was the most commonly known method. All except one respondent knew that sterilisation was an effective method of birth control. Of these, only two disapproved of it as they believed that it causes bleeding, loss of weight and various other complications which they could not enumerate. As regards spacing methods, 18 (72 per cent) were aware of the IUD though only 11 of the 18 (44 per cent) approved of it. Of the seven who disapproved, five stated that it causes bleeding whereas according to the other two, it caused abdominal pain and weakness. Surprisingly, only 10 respondents were aware of the condom and only seven of them approved of its use.

As seen in Table 1, the majority of the respondents 21 (84 per cent) gave only dietary advice to the post-natal mothers. Only a quarter (24 per cent) reported that they also advised them about family planning. When asked directly about their attitude to family planning, all of them stated that one male issue was a must, but that the family should be composed of two to three children. However, as mentioned earlier, only a fourth of the respondents had actually given any family planning advice to the mothers whose deliveries they had performed.

All the respondents visited the mothers delivered by them every day for a period of one to two weeks, the incentive being the payment due to them

TABLE 1

Post-natal care advised by the traditional birth attendants  
as reported by them and their clients

Advice given regarding	Reported by TBAs (n=25)	Reported by post-partum mothers (n=116)
Diet	21 (84.0)	93 (80.2)
Hygiene	1 (4.0)	0 (00.0)
Lying-in period	9 (36.0)	36 (31.0)
Breastfeeding	7 (28.0)	21 (18.1)
Family planning	6 (24.0)	17 (14.6)
Immunisation	18 (72.0)	88 (75.9)

Figures in brackets denote percentages. The figures represent multiple responses.

after the first week's visit. All of them also massaged and bathed the baby and massaged the mother every day. Some helped in the household chores and all washed the mother's and baby's clothes. They looked for obvious symptoms of morbidity in the mother and child. However, the cord stump was examined by only ten (40 per cent) and even fewer examined the lochia, breast or uterus. Dietary advice was restricted to asking the mother to consume large quantities of *ghee* (purified butter) and hot foods such as nuts and *soonth* (dried ginger).

It is of interest to note that almost three fourths (72 per cent) of the respondents advised the mother to get the child immunised. During the visits when the investigator accompanied them, she observed two respondents advising a total of six mothers, all residing in the slum area, to plan their families. On the other hand, none of those working in the villages, did so. On interviewing the mothers it was found that the respondents functioning in the slum area had, in fact, advised 11 more mothers. In all the 17 cases, the respondents had advised the mothers to opt for postpartum tubal ligation as all of them had at least four living children. Interestingly, ten of the 17 mothers did accept tubectomy and were accompanied by the respondents to the hospital where they underwent the operation. Of the seven mothers who did not accept the procedure, two explained that their husbands objected to the operation, while the rest said that there was no one to look after the house during their hospitalisation period.

The respondents reported that they did not advise sterilisation to women with two to three children as they could not be sure of the survival of their children, and were therefore unwilling to have the women take a risk. The 18 (72 per cent) respondents who approved of the IUD and condom said that they recommended these methods only when specifically asked about them,

and even then, only to women known to them in order to avoid being harassed if any complications were to occur.

None of the respondents knew the exact amount of incentive money given for motivation, though as many as 80 per cent (20 respondents) were aware that varying amounts of money were given to both motivators and acceptors. They did not consider it worth their while to waste their time in motivating potential clients. One of them categorically stated that although higher incentives were given at camps, hospitals, being better equipped, were safer.

When asked to make suggestions for improving the family welfare programme, the majority of the respondents (60 per cent) recommended increased monetary incentives to couples and motivators. Surprisingly, eight (32 per cent) also recommended health education of the people and six (24 per cent) advocated better health care. One respondent firmly believed that the introduction of injectable contraceptives would give the programme a boost, while two others maintained that there should be no coercion.

Over half of the respondents (52 per cent) asserted that pregnancy cannot be terminated and on repeated questioning said that they had neither attempted such a procedure nor referred any one, nor had they been consulted by any woman for the purpose. Almost half (48 per cent) of the respondents however said that pregnancy can be terminated at any time and about two fifths knew about the legalisation of the abortion procedure. One of the respondents reported to have referred her cases to the local private practitioner and another to have performed dilatation and evacuation herself with instruments she possessed (these were shown to the investigator). However, the rest (a third) also reported methods and indigenous drugs which they knew of, claiming that they did not use them any more.

When questioned about the management of infertility, the majority (68 per cent) reported that they did not treat such cases. About 16 per cent referred such cases to hospitals. Of the 8 (32 per cent) who claimed to treat infertility, three reported the use of herbal concoctions, the contents of which they refused to reveal, and two said that they gave oral contraceptives for three months which, they explained, helped reduce 'swelling of the uterus'. In case these methods failed, they referred the women to the local hospital or practitioner. One respondent said that she douched the vagina with potassium permanganate to cure infertility. The rest did not reveal their mode of treatment.

## **Discussion**

Traditional birth attendants play a small but not unimportant role in family welfare programmes. Their role in providing family planning advice and services has been reported by Jafarey<sup>1</sup> and Nicolas *et al*<sup>2</sup>.

The reason given by the traditional birth attendants for not making an

effort to motivate mothers delivered by them was that the women expected them to accompany them to the hospital, which meant that their work suffered. This was particularly so in the case of those traditional birth attendants who worked in the slum area as the incentive money was not enough to compensate for their loss of wages. About one fifth of the traditional birth attendants also stated that in the event of any complication, the hospital did not pay adequate attention. An important finding was that of the 17 women who were motivated by the traditional birth attendants, ten (58.8 per cent) had accepted sterilisation, thereby indicating their rapport with the mothers.

Therefore, if the services of traditional birth attendants, particularly those operating in slums where the fringe population lives, are integrated with those of the nearest MCH centre, much can be done to improve the family welfare programme. This integration can be brought about by the lady health visitor or female health assistant by maintaining a record of all functioning traditional birth attendants in the area and calling them to the centre every month. While the initial visits could be used to train them, at subsequent visits they could be supplied with condoms for distribution to clients motivated by them.

The findings also argue that traditional birth attendants who accompany clients to the primary health centre for IUD insertion or to the hospital for ligation, should be given some monetary incentive, other than that given to the motivator. This is in view of the finding that all the traditional birth attendants said that the existing monetary incentive is too small to compensate for the time which they would lose in accompanying their clients to the hospital for family planning services.

The traditional birth attendants' fear that possible method complications arising among acceptors are not taken care of could be removed by the active cooperation of the female health worker of the centre with the traditional birth attendants; the health worker could treat any minor complications that the acceptors may have, as conveyed to her by the traditional birth attendant, during her field visits. During our study we managed to make the traditional birth attendants cooperate by giving special attention to clients brought by them. The health centre staff should also provide prompt services to such clients brought by the traditional birth attendant. This would reaffirm their faith in the formal health service system.

None of the traditional birth attendants in the study claimed to perform abortions though most were aware that indigenous drugs, herbal concoctions etc. can be given to induce abortion. Kakar and his co-workers<sup>3</sup> observed that many traditional birth attendants did perform abortion, and in another study,<sup>4</sup> reported that they use sticks with irritants, drugs and herbal concoctions to do so. The traditional birth attendants in this study were aware that this practice is not legal, and about two fifths were also aware that MTP has been legalised and can be obtained on demand in a hospital.

Taking a cue from these findings, the post-partum programme of family planning can be extended to slum areas with the help of traditional birth attendants, by providing this service promptly to the women brought by them. This would help the traditional birth attendants to improve their rapport with the women in their work areas and at the same time through proper family planning counselling of such clients, give a fillip to the family welfare programme.

This grassroot MCH worker, who by virtue of being the confidante of a large number of women who are the target of our family welfare programme, can thus be brought under the purview of formal health services to effectively promote the health and family welfare programme.

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# **FAMILY PLANNING AMONG THE KOLS OF MANIKPUR BLOCK (U.P)**

**DR. R.S. TRIPATHI\***

## **Introduction**

Recognising that the high rate of population growth is responsible for the country's socio-economic problems, India incorporated family planning as a part of her development plans as early as in 1952. In fact, family planning has been recognised as a pre-requisite for a broad-based development strategy for improving the quality of life of an individual or community.<sup>1</sup> Family planning, therefore, has been given high priority in the Sixth and Seventh Five Year Plans.<sup>2</sup> Point 13 of the 20-point programme asserts that family planning should be promoted on a voluntary basis as a people's movement.

In spite of all the efforts, the family planning programme has not been welcomed by all, and more so, by the backward sections of society<sup>3</sup>. The factors responsible for this non-response need to be investigated at the community level in a micro-area. With this in view, an attempt was made to see to what extent the Kols, a very poor tribe of central India, has adopted family planning and what is the attitude of these people towards the programme.

## **Objectives**

The objectives of the study were: (1) to determine the level of knowledge of family planning methods among the Kols; (2) to investigate the factors influencing the adoption of family planning; (3) to highlight their attitudes towards family planning, and, (4) to draw policy implications for improving future family planning performance.

The Kols covered in the present study were from Manikpur Block in Banda district of Uttar Pradesh. The study hypothesised that: "Kols living in the vicinity of Manikpur town give more importance to family planning than those living in the remote and interior areas." This was based on the premise that innovations take place in towns and diffuse to the countryside, with the intensity of diffusion decreasing spatially towards the countryside. Therefore, an area close to a town is influenced by urban culture and vice versa, and consequently, the population living close to the town must be more sensitive to innovations and vice versa.

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### **Sample and Study Area**

The Kols are a very primitive tribe of central India. The meagre information available about the Kols suggests that their habitat extends from Kolhan in Bihar to the Chittoor hills. They are found in the hilly and uneven tracts of Banda, Allahabad, Mirzapur and Varanasi districts of Uttar Pradesh. A number of legendary stories are recorded on the origin of the Kols<sup>4</sup>. The Kols regard themselves as the descendants of 'Shabari', a contemporary of Lord Rama. Shabari was also called 'Kolini' i.e. the mother of Kols. In Uttar Pradesh, the Kols have been declared as a Scheduled Caste. However, as they have all the characteristics pertaining to tribes, the Government of Uttar Pradesh has taken a decision to extend to them all the facilities due to tribes<sup>5</sup>. They are permanent settlers, whose main occupation is the collection of dry wood and other forest products, and working in the fields of local landlords. Literacy is far from them. They are extremely poor and traditional in their living and thinking. Generally, Kol families live in one-room houses made of mud and wood; some Kol houses are thatched.

The study area, Manikpur Block, lies in the south-eastern part of Banda district in Uttar Pradesh. The entire block is rocky and uneven, and is covered by forests and grasses. Its total population is about 96,000 of which 36.35 per cent are scheduled caste people. Socially and economically, the area is the most backward in the district. Manikpur is the only market town in the area.

### **Methodology**

The present study is based on a survey of twenty villages, preferably consisting of 40 to 50 Kol families each, selected by stratified random sampling. Ten of these were from the vicinity of Manikpur town and the rest from remote areas, far removed from Manikpur town. In the second stage, 15 families were randomly selected from each village. Thus, 300 Kol families formed the total study sample. The interview method was used to assess family planning knowledge, using a questionnaire prepared for the purpose. Though females were the main respondents, males (husbands) were also contacted on some questions which the wives were too shy to answer. Since Kol girls marry early, and have two or more children by the age of 23-25 years, females below the age of 25 years were not covered. The ages of the respondents varied between 25 and 50 years. Almost a third (30.0 per cent) were between 25-30 years; as many as 51.7 per cent were 31-40 years and the rest (18.3 per cent) were aged 41-50 years. Thus, the majority of respondents (81.7 per cent) were under 40 years of age. The data was tabulated and interpreted, and the hypothesis was tested at a 5 per cent level of significance.

## **Results and Discussion**

### *Knowledge and Adoption of Family Planning*

Most of the available family planning methods are unknown to the rural poor. Even if they know a method, they are unable to get it easily. The respondents' knowledge about spacing methods too was found to be very poor. About a third of the non-acceptor respondents knew about contraceptive methods such as Nirodh (condom) and the IUD (loop). Of them, 85.7 per cent stated that they disliked using Nirodh and 14.3 per cent said that they did not know how to use these methods.

While only 70 (23.3 per cent) respondents had adopted sterilisation, 33 or 14.4 per cent of the remaining 230 respondents wished to adopt it, but had not done so due to certain constraints. When questioned about the constraints, 42.4 per cent expressed a fear of surgical operations, while 33.3 per cent said that the family planning centre was not easily accessible. Two respondents each stated that children were a source of income and therefore, they did not want to adopt the terminal procedure; or that they had only one male child; or that governmental assistance was not being properly provided to sterilisation acceptors; or ascribed two or more of these reasons for not opting for sterilisation inspite of a desire to do so.

### *Causes of Reluctance towards Family Planning Acceptance*

During the course of the survey, the benefits of family planning were explained to the respondents and they were persuaded to adopt it in their own interest as well as in the interest of the country. However, as many as 65.7 per cent of the respondents flatly refused to adopt family planning. The reasons given were more or less similar to those given by the respondents who wished to undergo sterilisation. About 23.9 per cent said that they were afraid of the family planning operation, 17.8 per cent felt that they had "passed the age to adopt family planning", 15.7 per cent had only one male child, while 10.7 per cent had no male child. Among the rest, 10.1 per cent said that children brought in small earnings, 7.2 per cent found the family planning centre not easily accessible, and 6.6 per cent complained that the stipulated governmental assistance was not given to the adopters. About 8.1 per cent ascribed two to three of the above-mentioned reasons for non-adoption.

### **Test of Hypothesis**

In order to test the hypothesis stated earlier, the villages located in the vicinity of Manikpur town were termed as "privileged" as their residents are able to avail of urban facilities; the rest were designated as "underprivileged" villages. It was found that the percentage of sterilisation adopters to total

families in the latter villages was 31.3 as compared to a corresponding percentage of 15.3 in the former. One fact is noteworthy here. The greater proportion of adopters in the underprivileged villages does not indicate that these families give more importance to family planning; rather, the weaker sections are more attracted to the incentives which are linked to sterilisation. In fact, many were compelled by the revenue personnel (specially by the 'Lekhpal') to adopt the method if they wished to avail of certain facilities such as land allocation for house construction and cultivation. However, attitudes towards planned families varied among couples in the privileged and under-privileged villages. Among non-adopter respondents from the privileged villages, 18.1 per cent wished to adopt family planning and 44.1 per cent had knowledge of spacing methods. The corresponding figures for under-privileged villages were 9.7 and 19.4 per cent respectively. Moreover, 57.1 per cent of those who knew about spacing methods in the privileged villages also used a method as compared to a corresponding percentage of 45.0 in the underprivileged villages.

If the Kols living in the privileged villages give more importance to family planning and vice versa, the proportion of respondents willing to undergo sterilisation and the proportion of respondents having knowledge of contraceptive methods to total respondents who have not adopted family planning would be greater in the privileged villages and vice versa. Both these proportions were computed separately for the privileged ( $p_1$ ) and underprivileged villages ( $p_2$ ) and subjected to test on the basis of the following formula:

$$z = \frac{p_1 - p_2}{\sqrt{\frac{p_1 \cdot q_1}{n_1} + \frac{p_2 \cdot q_2}{n_2}}}$$

$p_1 = 0.181$  and  $p_2 = 0.097$  for the former case

$q_1 = 1 - p_1$

$p_1 = 0.440$  and  $p_2 = 0.194$  for the latter case

$n_1 = 127$  and  $n_2 = 103$

The calculated value of  $z$  for the former case was 1.33, which was significant at a 10% level, and that for the latter, was 2.964 which was significant at a 5% level. Thus, the hypothesis that "Kols living in the vicinity of Manikpur town give more importance to family planning than those living in the remote and interior areas," tends to be valid.

### **Programme Implications: Need for Motivation**

During the field survey, it was observed that the Kols did not seem to

be concerned about their growing family size. Women bearing six to eight and even more children were very common. When asked whether they desired more children, the respondents laughed shyly and answered, "The birth of a child is a gift of God. None can get more children against His will". In response to a question on ideal family size, nearly four fifths (80 per cent) were found to be in favour of a family of four to five children with almost 6 per cent expressing more than five children as the ideal number. The remaining (14.3 per cent) favoured a three-child family.

The above findings clearly indicate an acute need for education and motivation among the Kols to encourage the adoption of the small family norm. They are illiterate and highly traditional in their life style and thinking, a situation which needs to be understood by planning personnel<sup>7</sup>. In this context, the effectiveness of the message will determine the degree of motivation and acceptance.<sup>8</sup> The messages should be powerful enough to compel the people to think seriously about the problems of the menacing population growth, and to take responsible action. The Kols live in inaccessible and interior areas where new ideas reach rather late. It is suggested that mass media channels as well as group discussions may be used effectively to educate and motivate the Kols to adopt family planning.

## Conclusion

The knowledge of contraceptive methods was found to be very poor among the Kols of the study villages. Nearly half of the respondents who knew about these methods, did not use them. About a quarter had accepted sterilisation and about 14 per cent of the remaining respondents wished to undergo the terminal procedure but had not done so for various reasons. As many as four fifths of the respondents refused to adopt family planning because of fear of the operation or traditional views. It is felt that effective motivation can lead to the adoption of family planning by the Kols.

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# **ROUTES TO ENHANCED CHILD SURVIVAL IN INDIA**

**DR. ALOK CHAURASIA\***

## **Introduction**

The survival of infants and young children has traditionally been viewed as an indicator of economic and social wellbeing. It reflects not only the magnitude of those health problems which are directly responsible for the death of infants and young children but also the net effect of a multitude of other factors including prenatal and postnatal care of the mother and the newborn, and the environmental conditions to which the child is exposed. Unfortunately, in India, the chance of survival of infants and young children remains exceptionally low. Perhaps more disturbing is the problem of wide regional variations. Thus, Kerala has achieved an exceptionally high probability of survival of infants—almost at par with a number of developed countries while in Uttar Pradesh, this probability is exceptionally low and may be ranked as fifth poorest in the world.<sup>1</sup> It has been estimated that during 1970-80, nearly one-fourth of the country's population was residing in areas where the infant survival rate was less than 850 per 1000 live births. On the other hand, only 4 per cent of the country's population was residing in areas where it was more than 950 per 1000 live births.<sup>1</sup> Clearly, regional variations in the probability of child survival in India are the widest in the world.

## **Objectives**

The present analysis focusses on the child survival experience that is markedly at variance with what might seem to be dictated by the economic determinism exerted by income levels. It assumes that ultimate constraints on enhancing child survival probability are those of material resources and hence of economic living standards. Though post World War II experiences in a number of developing countries suggest that economic shackles can be loosened to a very marked extent by the application of new medical technology and by bringing about a transformation in the society, a certain take-off into the transformation of society still seems to play an important role in making medical technology effective, and in sustaining the potential for child survival. It is only when this stage is achieved that the traditional link between

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social and economic development loosens and improvements in survival potential far outpace social and economic progress.

In view of the above consideration, the present analysis addresses the following questions:

1. To what extent are the achievements in child survival in India linked with the level of living? Are the exceptionally good achievements balanced by the exceptionally bad ones?
2. In what ways do states with exceptionally good achievements contrast with the ones with exceptionally bad achievements?
3. For states with vastly different histories, are there lessons to be learnt or policies that can be formulated to accelerate the process of improvement in child survival probability?

### Data and Methodology

The child survival and the economic data used for the analyses were drawn from the statistical information published by the Registrar General's Office, Government of India.<sup>2,3</sup> Table 1 shows the regional variation in infant survival rate in India.

**TABLE 1**  
**Regional variations in infant survival rate in India, 1984**

Infant survival rate	States
Above 950	Kerala
Between 925-949	Jammu & Kashmir Andhra Pradesh Karnataka Punjab
Between 900-924	Bihar Assam Himachal Pradesh Tamil Nadu Maharashtra West Bengal
Between 875-899	Rajasthan Madhya Pradesh Gujarat Haryana
Below 875	Orissa Uttar Pradesh

*Exceptional Child Survival Experience*

A simple ranking procedure was applied to measure exceptional child survival experience. The 17 major states of the country were ranked from worst to best by their level of income as well as by their level of child survival probability. The income level was measured by the gross domestic product per capita at fixed prices (GDP) for 1984-85, while the infant survival rate provided a measure of child survival probability. The algebraic difference between the rank of child survival probability and that of GDP then, gave an idea as to whether the child survival experience of a particular state was exceptionally good or exceptionally poor as compared to its income level.

The results of the above exercise have been compiled in Table 2. Relative to income levels, some states appear to have a better child survival experience as compared to others.

TABLE 2

Infant survival levels relative to income levels for 17 major Indian states

State	Gross domestic product per capita at fixed prices, 1984-85 (GDP)		Infant survival rate, 1984		Difference in ranks
	Value (Rs)	Rank	Level	Rank	
Andhra Pradesh	705	8	925	4	4
Assam	584	12	903	10	2
Bihar	470	17	904	9	8
Gujarat	993	4	894	12	-8
Haryana	1111	2	809	11	-9
Himachal Pradesh	673	9	910	8	1
Jammu & Kashmir	548	15	925	4	11
Karnataka	715	7	926	3	4
Kerala	620	10	971	1	9
Madhya Pradesh	605	11	880	13	-2
Maharashtra	1018	3	924	5	-2
Orissa	512	16	870	15	1
Punjab	1538	1	934	2	-1
Rajasthan	577	13	878	14	-1
Tamil Nadu	726	6	822	6	0
Uttar Pradesh	570	14	846	16	-2
West Bengal	827	5	918	7	-2

If a critical test for deciding whether the child survival experience of a particular state is exceptionally good or bad may be formulated by taking



an infant survival rate in the range of 940-900 to 1000 live births, and a rank difference between infant survival rate and GDP in the range of 7 to -7, as the criteria for normal child survival experience, then only Kerala exhibits an exceptionally good experience while Gujarat and Haryana have exceptionally poor child survival experiences in relation to their income levels (Table 2). Clearly, some states have exceptionally high child survival levels, far above those that are dictated by their economies and others fall far below. The question is: what determines that the child survival experience in a particular state will be exceptionally good or bad? In an attempt to answer this question attention was focussed on these three states with exceptionally good or bad experiences in child survival namely, Kerala, Gujarat and Haryana.

The same procedure as in case of child survival was adopted to decide whether the three selected states have exceptionally good or bad experiences in a number of social, economic and health related characteristics in relation to the income level (see Table 3). In addition, Spearman's rank order correlation was calculated between these characteristics and the infant survival rate for these and all other states included in the data set.

### **Results and Discussion**

Table 3 clearly indicates that in Kerala, the experiences in relation to a number of population characteristics are far better than those that are dictated by its income level. In contrast, the experiences of both Gujarat and Haryana lag far behind. There are only a few exceptions to this general pattern. Thus, despite its low income level, the exceptionally good experience in child survival in Kerala is associated with an equally exceptionally good experience in a number of social and economic characteristics of the population. On the other hand, despite above-average income levels, both Gujarat and Haryana do not experience comparable experiences in a number of basic health, social and economic population characteristics. Clearly, income alone is not sufficient for enhancing the chances of survival of infants and young children.

Table 4, presents Spearman's rank order correlation coefficients of some basic characteristics of the population with the infant survival rate. These correlations provide valuable insight into the factors that are chiefly responsible for classifying a state as a good or bad achiever in the area of child survival. In an attempt to identify these factors, they have been ranked according to the size of the correlation.

One of the most obvious differences between Kerala on the one hand, and Gujarat and Haryana on the other, is the higher proportion of medically attended births in rural areas in Kerala. For all the 17 states of the country, ranking by infant survival rates very closely matched ranking by the proportion of medically attended births in rural areas. The next important difference

TABLE 3

**Rank difference of various population characteristics and infant survival as compared to income level, Kerala, Gujarat and Haryana**

Characteristics	Kerala		Gujarat		Haryana	
	Level	Rank diff	Level	Rank diff	Level	Rank diff
1. % of women in organised sector employment, 1983	35.0	8	10.8	-5	9.0	-10
2. Singulate age at marriage for females, 1981	21.8	6	19.5	-3	17.9	-10
3. % of births of order 4 and above, 1981, rural	28.9	9	39.1	-6	39.4	-9
4. Prevalence of contraception, 1984	36.3	5	39.7	0	40.2	-1
5. Per capita expenditure on health, 1982-83	36.8	3	31.6	-5	40.1	-2
6. Population per physician, 1985	6470	-1	3976	-2	6133	-8
7. Female literacy in the age group 6-11, 1971	69.8	9	33.6	-1	23.4	-8
8. % of women practising purdah	4.3	5	41.8	-8	72.6	-15
9. % of births medically attended in rural areas, 1978	61.9	9	11.9	-8	26.0	-4

between the two groups was women's participation in organised sector employment. In both Gujarat and Haryana, women's share in organised sector employment was only ten per cent whereas in Kerala more than one-third of the work force in the organised sector is constituted by females.

Late order births also appeared to play an important role in deciding the level of child survival as ranking states by the percentage of births of fourth and higher orders was found to be significantly associated with ranking by infant survival rates. Clearly, child spacing and family limitation practices seem to play a definite and positive role in the nature of the child survival experience. However, the prevalence of contraception was not significantly associated with infant survival. This anomaly appears to be due to the differing demographic impact of the family planning programme in different parts of the country. It is interesting to mention here that despite an increase in contraceptive practice in both Gujarat as well as Haryana, as is revealed by the family planning programme service statistics, births of fourth and higher orders constituted nearly 40 per cent of the total births.

TABLE 4

**Spearman's rank order correlation coefficients between infant survival rate and selected characteristics of population**

Characteristics	Spearman's rank order correlation coefficient	Ranking
1. Percentage of medically attended rural births, 1978	0.7304*	1
2. Share of women in organised sector employment, 1983	0.6765*	2
3. Percentage of rural births of 4 and higher orders, 1981	0.6618*	3
4. Percentage of women practising purdah	0.5934*	4
5. Female literacy in the age group 6-11 years, 1971	0.5858*	5
6. Singulate mean age at marriage for females, 1981	0.5780*	6
7. Contraceptive prevalence, 1984	0.4314	7
8. Gross domestic product per capita at fixed prices, 1984-85	0.3897	8
9. Population served per physician, 1985	0.2297	9
10. Per capita expenditure on health, 1982-83	0.0171	10

\* Significant at  $P = < .05$

By contrast, in Kerala, this percentage was only about 29, even when the contraceptive prevalence rate in Kerala was as much as four absolute points less than that in Gujarat and Haryana.

The other population characteristics which bore a statistically significant association with infant survival, were social indicators related to the status of women in society, such as female literacy, the singulate mean age at marriage for females and the practice of the purdah system. The most telling effect appears to be due to the practice of purdah as revealed by Tables 3 and 4.

The educational status of the mother also played some role. The educational status of mothers was measured by the literacy of female children in the age group 6-11 years in 1971, since in 1984, these female children will be in the age group of 19-24 years—the prime maternal age in the country. In 1971, the literacy rate in Kerala for female children aged 6-11 years was nearly 70 per cent while the corresponding rates in Gujarat and Haryana in 1971 were only 36.6 and 23.4 respectively.

Interestingly, the expenditure on health as well as the availability of physicians appeared to play little role in deciding the level of child survival experience. This finding is not very unexpected as, in India, most health facilities and physicians are concentrated in urban areas where only a fifth of the population resides. This urban bias in the pattern of health expenditure is clear from the fact that in the Sixth Five Year Plan only 31 per cent of the total outlay for health was allocated to rural health programmes.<sup>4</sup> Rather, the availability of some medical facility within a reachable distance plays a more important though insignificant role. In Kerala, nearly 90 per cent of the population has a medical facility within five kilometers of the residence whereas in Gujarat and Haryana this percentage is 63.4 and 33.5 respectively.

Thus, the success story of Kerala in the field of child survival appears to be mainly due to the enhanced status of women and an efficient rural health care delivery system. Income is of little importance, so also investment in health and the availability of physicians. However, in an attempt to understand how and why Kerala achieved these conditions which ensure an enhanced child survival probability and why Gujarat and Haryana, despite their substantially increased income levels could not achieve them, the routes followed by Kerala for attaining an exceptionally high child survival probability were identified. This was largely an exercise in firming up statistics, and highlighting the changes that have taken place in Kerala in the past. The question of identification of the forces behind these changes will be investigated and discussed later.

### *Trends in Child Survival*

Table 5 attempts to summarise what is known about child survival experience in Kerala, the state with exceptionally good child survival experience, and in Gujarat and Haryana, the states with exceptionally poor child survival experiences. The aim of this exercise was to identify whether there were indeed 'breakthrough periods' which initiated an improvement in child survival probability or not. Rural infant survival rates were used in this analysis simply because of the availability of this information for the period 1958-59. In order to maintain comparability in later years, the authors preferred to focus their attention on this rate only. There is some logic in this selection too, as nearly three-fourths of the population of the country dwells in rural areas, and therefore, changes in rural child survival patterns largely determine the overall status of child survival.

Trends in child survival, as measured by infant survival rates in Kerala are most remarkable. In the last 25 years or so, Kerala has been able to raise its infant survival rate by 60 points. In contrast, in Gujarat, the infant sur-

TABLE 5

## Trends in rural infant survival rate in Kerala, Gujarat and Haryana

Trend and year	Kerala	Gujarat	Haryana
<i>Infant survival rate</i>			
1958-59	911	866	878
1970	944	841	918
1980	959	881	889
1984	971	874	890
<i>Total change in infant survival rates</i>			
1958-70	33	-25	42
1970-80	15	40	-29
1980-84	12	-7	1
<i>Average annual change</i>			
1958-70	2.75	-2.08	3.50
1970-80	1.50	4.00	-2.90
1980-84	3.00	-1.75	0.25

vival rate increased by only 8 points, and in Haryana, by only 12 points during the same period. Clearly, Kerala has not only been able to initiate an increase in child survival but has also been able to sustain it. On the other hand, Gujarat initiated an improvement in child survival probability only after 1970; in fact, between 1958 and 1970, there was a decline in child survival probability. Haryana was able to initiate such improvements as early as in 1958 with a steep rise during 1958-70, which decreased considerably after 1970. Thus, whatever achievements in child survival were made by Haryana prior to 1970 were lost thereafter.

Kerala attained the maximum gain in child survival probability during the sixties when the rural infant survival rate increased by 33 points. Since 1970, the increase in child survival probability in the state has slowed down. In Haryana, the increase in the infant survival rate in rural areas was even greater than Kerala's during the period 1958-70 when it increased by 40 points. But, whereas Kerala was able to sustain its good beginning, Haryana, after a very good start, forfeited the initiative. Thus, both Kerala and Haryana had a 'breakthrough period' in child survival in the sixties. On the other hand, in Gujarat, improvements in child survival started only after 1970. Therefore, even Gujarat and Haryana—states with an exceptionally bad experience in child survival—did experience a 'breakthrough period'. What were the factors responsible for Gujarat and Haryana being unable to sustain the benefits

of the breakthrough like Kerala? This brings us to the second question of this analysis—what were the forces behind this change in Kerala?

### *Forces Behind the Change in Kerala*

Historically and socially, Kerala is different from Gujarat and Haryana. This difference is so striking that it tends to question the belief that improvements in child survival can be achieved in other states in the same manner as they have been achieved in Kerala. Importantly, the state is isolated from the rest of the country by the Western Ghats and has looked out to the sea, and has a small population. In fact, the inhabitants of small Third World states, often islands, peninsulas or coastal enclaves have, on the whole, experienced a much greater cultural and demographic change than have larger societies.<sup>1</sup>

One other point is probably more important. Most of the rural areas in Kerala are densely populated and grow cash crops widely. Dense settlements and widely diffused commercial farming and other non-subsistence activities in these areas appear to favour a reduction in rural-urban differences in child survival probability—a reduction that is the key to the attainment of a high child survival probability. Many of these services are non-agricultural such as services, retailing and some artisanship, spurred both by population densities and apparently, by new demands created among an educated population. Land reform in Kerala has not established a more firmly based peasantry but a rural population among which most families derive limited support from small plots of land, while also sending family members to seek other incomes simply because earning from agriculture is not sufficient for their livelihood.

In Gujarat and Haryana, on the other hand, rural areas are sparsely populated. The population density in Gujarat and Haryana, as revealed by the 1981 census, is 123 and 232 respectively as compared to 558 in Kerala.<sup>2</sup> Moreover, land reforms in these states have resulted in a firmly based peasantry. Income from agriculture alone is sufficient for the livelihood of the family and there is little need of additional income. Education has spread in these states but it has never been a factor in the development of rural economy, and therefore, has never been an attractive proposition.

An interesting feature of the population structure of Kerala is the exceptionally high ratio of females in the State. According to the 1981 census, there were 1032 females for every 1000 males in Kerala as compared to 942 females in Gujarat and 870 females in Haryana for every 1000 males. The sex ratio in Haryana, incidentally, is amongst the lowest in the country. This excess of females over males in Kerala may be one reason for the development of a rural economy that is not based on agriculture and other profes-

sions of heavy labour but on such professions which require mild physical labour and can easily be performed by females. Perhaps due to this, education, and especially that of girls, has always been an attractive proposition in Kerala. In Gujarat and Haryana, by contrast, there is a deficiency of females and hence few females are available for jobs outside the home. Thus, the education of girls in these states carries little weight purely in terms of income.

Perhaps the most important difference between Kerala, and Gujarat and Haryana is that of female autonomy. This is the result of both the demographic configuration as well as the social system. But whatever the reason, there is a clear-cut difference in the status of women in Kerala on the one hand, and Gujarat and Haryana on the other. This marked degree of female autonomy is perhaps central to the exceptionally good child survival experience of Kerala. In terms of female autonomy, the society in Kerala, despite being poor can be termed as open whereas the society in Gujarat and Haryana, despite being rich, can only be classified as conservative. Demographically, females in Kerala, have at least an equal say in society simply because they outnumber males. Because of their numerical strength, they work hand in hand with males for earning the family's bread and butter. On the other hand, in both Gujarat and Haryana, the status of women is poor simply because they are not the bread earners of the family.

### *The Health Care Delivery System*

It is clear from the foregoing analysis that Kerala as well as Gujarat and Haryana, had a 'breakthrough period' of about ten years duration during which child survival in these states improved considerably. However, one cannot expect a radical change in educational and social attitudes in such a short period. There is, therefore, a high probability that most of the changes in child survival experience can be attributed to the availability of health services, especially in rural areas. Admittedly, these gains presuppose existing social and economic levels and imply little as to the likely gains in the absence of these factors. Therefore, the factors responsible for Kerala's success and the failure of Gujarat and Haryana should be looked for in the efficiency and efficacy of the health care delivery system in meeting the needs of the population.

Perhaps a major difference in the two groups of states is the accessibility of existing health facilities. In Kerala, nearly 90 per cent of the population was found to be having a health facility within five kilometers of its usual place of residence. In Gujarat, this percentage was 63.4 per cent and in Haryana only 33.5 per cent.<sup>1</sup> Because of this factor, urban-rural differences in child survival rates were not very large in Kerala.<sup>6</sup> There is no such thing as remoteness in the health care delivery system in Kerala. This

feature is of great advantage as it is well known that the utilisation of health facilities is directly related to the distance at which these services are available.

In Gujarat and Haryana, the situation is entirely different. Remoteness of health care facilities is a common experience in rural areas, and one has to travel a distance of 10 to 15 kilometers on average, to reach a hospital or a health centre. Because of this inaccessibility, urban-rural child survival differentials are very marked. It appears that both in Gujarat and Haryana, the increase in health inputs with increasing income was largely responsible for the initial breakthrough in child survival. But as the health care delivery system failed to reach remote populations, these initial gains slowly faded out. In Kerala, on the other hand, such a phenomenon did not occur, there being no such remoteness due to the high population density.

There are other differences too. Kerala has been able to cover a high percentage of births in rural areas through trained birth attendants despite a low population-physician ratio. Gujarat and Haryana have failed to do so despite a heavy concentration of doctors. Schemes such as that of village health guides and the training of traditional birth attendants have been implemented more effectively in Kerala as compared to Gujarat and Haryana. Similarly, despite the fact that the prevalence of contraception is higher in Gujarat and Haryana, the percentage of births of fourth and higher orders in Kerala was less as compared to Gujarat and Haryana. It appears that the increase in health inputs in Gujarat and Haryana due to increases in income levels did not result in an increased efficiency and efficacy of the health care delivery system as in Kerala. It is because of this high efficiency and efficacy of the health care delivery system that the attendance in government hospitals in Kerala is easily the highest in the country. On the other hand, health services available in the rural areas of Gujarat and Haryana appear to remain unutilised either because these services are too far away or the efficiency and efficacy of these services is very poor.

Awareness of the people, especially the poor, has also made a difference. In Kerala, there is a substantial increase in awareness among the poor that they have a right to health services, that these services are not a boon conferred upon them. This awareness that some medical help will be available at any time of the day or night in an emergency, has gone a long way in improving the child survival probability in the state.<sup>7</sup> Politicisation of the many and the poor and its impact for the good of all is clearly visible in Kerala.

## **Conclusion**

The difference in the child survival experience of Kerala on one hand and of Gujarat and Haryana on the other can be traced to the structure of rural economy and the population structure in addition to the availability of health facilities. It is this structure of rural economy in Kerala that has led



to universal education and exceptional female autonomy. In Gujarat and Haryana, the changes in rural economy increased income levels but failed miserably to generate a demand for schooling, especially of females and could not ensure female autonomy. This failure of rural economy in Gujarat and Haryana has resulted in a traditional and orthodox society which is resistant to change whereas in Kerala, the structure of the rural economy was able to develop an aptitude for change in the society.

Rural economy in Kerala is not entirely based upon agriculture. The land holdings in Kerala are not big enough to earn sufficient income for the bread and butter of the family. Because of this inadequacy, the people have to opt for jobs other than those related to agriculture. At this stage, the demand for schooling is created as better educated persons hope to get better jobs and higher wages. As females outnumber males in Kerala, they usually come out of their homes in search of additional income for the family. Being a bread earner as well as being educated, they have more autonomy than women in Gujarat and Haryana. As there is freedom in the society for the females to go outside their homes, they generally do not wait for their husband and other male relatives if they have to visit the hospital or health centre as is generally the case with women in Gujarat and Haryana. A high health facility density also plays a significant role at this stage. The net result is increased attention towards children. This increased attention or care, then, results in better child survival probability.

In Gujarat and Haryana, rural economy is totally based on agriculture. Land holdings are large and the income from agriculture is enough not only for the bread and butter of the family in general but also for leisure. The green revolution has increased the productivity of agriculture and has pushed income levels further. But it has put the society on the wrong path. Agriculture has become mechanised due to this revolution and the worst sufferers are the females who assisted males in the fields in those jobs which are now taken over by machines. As there is no concept of better education, better jobs and better wages in agriculture, there is never a demand for education as in Kerala. Increased agricultural productivity has brought in affluence and practically imprisoned females inside the home as there is no need to earn any additional income for the family. This affluence has also led people to stop thinking about planning and limiting their family size as they have sufficient subsistence to support the additional children born. The low proportion of females as compared to males in these states has further aggravated the situation. There is total male dominance not only because males outnumber females but also because of the family system, kinship structure etc. which is entirely different from that in Kerala.<sup>7</sup>

Kerala achieved a high health facility density because of its high population density but such a situation neither exists in Gujarat or Haryana. Because

the health facilities in the latter states are beyond the reach of an ordinary villager, the efficiency of the system is affected considerably. The poor efficiency coupled with a low population density has made health care delivery services ineffective.

Thus it may be concluded that Kerala was able to maintain its efforts for enhancing child survival mainly because of its social system, structure of rural economy and demographic characteristics. Incidentally, the same factors are behind the failure of Gujarat and Haryana in maintaining the good effects of the 'breakthrough period' in child survival.

One would like to know: What are the prospects for enhanced child survival probability for other states of the country—those which are in between Kerala and Gujarat and Haryana? To this end, it may be emphasised that the social system, the demographic structure, the structure of rural economy etc. in Kerala is unique. The majority of the states of the country are nearer to Gujarat and Haryana than to Kerala in terms of the above characteristics. It is, therefore, rather improbable that the Kerala type of experiment or experience could be repeated in other major states of the country. Similarly, it is also equally improbable that an increase in income alone will enhance child survival probability.

What are, therefore, the options for the other states? Perhaps the key to the success is education coupled with an efficient health care delivery system. A shift from an agriculture based rural economy to one of cottage industry, may perhaps, work as an important and long awaited catalytic agent to hasten the change in the social system. The provision of health services, where they are otherwise unavailable or unaffordable, can have—at least in a society with some education—a dramatic effect on child survival. Furthermore, success depends little upon new and expensive technology, instead it depends upon the availability of health services particularly in rural and remote areas, efficiency of these services and on the mass awareness about the fact that people have a right to receive health services. Fundamentally, it must be an ideological movement, though bureaucratic mechanisms such as inspection, reporting and following up may also be of some value.

What is crystal clear is that enhanced child survival probability will not come as an unplanned spin-off of economic growth. The stress on maximising the rate of economic growth may minimise the rate of improvement in child survival and other desirable social advances. This is an area where government interventions are more effective than allowing individuals to use the market, for, given a choice, they might decide to allocate their expenditure on something other than education and health. One problem is that when health and education are purchased separately for each member of the family, the patriarch may allocate insufficient amounts for his daughters and

wife, especially if females are regarded as economically unproductive in this society.

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***The Journal of Family Welfare*** will henceforth change its volume number with the calendar year, that is, beginning with the first issue in March every year. The September 1989 and December 1989 issues of ***The Journal of Family Welfare*** will therefore constitute Volume XXXV, Number 5 and Volume XXXV, Number 6 respectively, instead of Volume XXXVI, Numbers 1 and 2 respectively. The four issues of ***The Journal of Family Welfare*** to be published in 1990 will constitute Volume XXXVI, Numbers 1 to 4.

***The Integrated Approach and Fertility Reduction: An Evaluation of FPAI's Karnataka Integrated Rural Project***, by Dr. Shireen J. Jejeebhoy, Dr. P. S. Nair and Mrs. Meera Halakatti, has been published as a Supplement to this issue of ***The Journal of Family Welfare***. The Supplement may be ordered by writing to the Managing Editor, ***The Journal of Family Welfare***, Family Planning Association of India, Bajaj Bhavan, Nariman Point, Bombay 400 021 (India).

# **ATTITUDINAL AND MOTIVATIONAL DETERMINANTS OF BIRTH PLANNING BEHAVIOUR**

**MR. MALAY KAPOOR\***  
**and**  
**MR. AMIT KUMAR GHOSH\*\***

## **Introduction**

During the last twenty years, scores of studies, working groups, seminars, conferences and workshops in India and abroad have recommended and repeatedly emphasised the effective role of motivation in the acceptance of family planning programmes, so much so that even communication specialists, let alone policy makers, administrators and bureaucrats, have accepted the superiority of the effect of motivation over information and education. Yet, hardly any scientific study seems to be available about the determination of the true motives underlying fertility behaviour. Family planning and population research is replete with KAP surveys and fertility surveys which attempt to delineate the characteristics of adopters or non-adopters. Such surveys have been mostly conducted by demographers, sociologists and cultural anthropologists who have fallen victim to the 'ecological fallacy', 'ex-post facto prediction fallacy', or the 'misplaced causation fallacy' often encountered in the social sciences. The outcome has been that every social scientist today complains (and remarks) that there is a big discrepancy between knowledge, attitude and practice of family planning. Very few admit that the observable discrepancy is not an inconsistency *per se* between attitude and behaviour, but is one of faulty, unstandardised and untested evaluative instruments used for the measurement of attitudes in such KAP surveys. As a matter of fact, little attempt has been made to measure attitudes as such precisely, although in a few studies, the discrepancies have been considerably reduced to yield positive findings.

An almost similar situation prevails in the area of motivation, its assessment and its determinant role for family planning acceptance. Firstly, the area of motivation has been explored very little. And, whenever it has, it has revealed superficial and *a priori* methods of studying motivation. Even the very concept of motivation has become very loose, yet the term is so popular these days, that it has now become a misnomer, let alone its objec-

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tive assessment. To illustrate, it is a commonplace observation that in the family planning programme today, a person who brings a case for sterilisation or for IUD insertion is officially designated as a 'motivator'. Unfortunately, social scientists have not yet attempted any meaningful study to analyse the real motivations behind the family planning adoption behaviour of eligible couples in different age groups on the basis of a scientific and objective measurement of motivation as such. A major inhibiting factor for this poor state-of-the-art is the lack of an objective, precise, evaluative instrument or device for the measurement of such a complex concept as motivation. Some studies<sup>1-3</sup> have tried to concentrate on the personal variables influencing family planning behaviour. However, these studies have been limited in terms of their perspective, sample and conclusions. Rao<sup>4</sup> admits that there are not enough meaningful studies in this field. A similar conclusion was also reached by Pareek and Rao<sup>5</sup> after an extensive review of literature. Rao<sup>4</sup> suggests that studies should be carried out to analyse the motivational components underlying birth planning behaviour.

In this context, a major breakthrough was made by Cattell and his associates<sup>6,7</sup> in the objective measurement of motivation. This has been recently adopted and standardised in Indian conditions by Kapoor and Singh<sup>8</sup> (1976) and his associates<sup>9</sup> in a bilingual format (English and Hindi languages). It is now possible to conduct more in-depth studies for the motivational analysis of the adoption or non-adoption behaviour of couples.

### **Conceptual Framework**

Terms such as 'attitudes', 'interest strength', etc. now have more precise and operational definitions than the usual ones. First, let us consider the term 'attitude', which forms the unit of behaviour within which the motivational component exists. The paradigm for attitude can be written as: In these circumstances (stimulus situation), I want so much (intensity of response) to do this (defined nature of response) with that (object of response). The intensity of the need to respond can be resolved into a number of motivational component factors. Hence, the strength of an attitude, which equals the strength of interest is not being measured by a verbal, self-evaluative questionnaire scale, which whatever the excellence of its artificial scaling properties, by any scaling method, proves to have poor validity against the motivational component factors and to be heavily biased in favour of one (a conscious) component. Therefore, motivational analysis includes a battery of half a dozen diverse objective devices (including one or two using projections), which have been demonstrated to have appropriate validity for the main motivational component factors.

A very comprehensive variety of manifestations and commonly recognised criteria of motivational strength in men, e.g. verbal statements, physiological

reactions, perceptions (projective measures), defence mechanisms, learning and memory phenomena, etc. are intercorrelated and are interpretable as the psychoanalytic id, ego, and super ego factors, as purely physiological components of interest, and components from unconscious complexes.

Motivational component factors which appear as components in the strength of interest in any course of action are the components of an integrated and conscious nature and the primary factors sharing the character of unintegrated and unconscious interest. However, in assigning functionally meaningful measures to an attitude strength, i.e., the strength of interest in following a defined course of action, in a defined life stimulus situation, a rationale of measuring at three possible levels become evident: (a) in terms of the strength of each functionally independent component, (b) in terms of the integrated and unintegrated interests, and (c) in terms of a simple measure summing the terms in (a) and (b), but losing much specific information in (a) and (b), valuable in psychological understanding and prediction.

Motivational component factors are of two kinds: (a) drive factors, in which loaded attitudes prove to have varied cultural content but to be united by the same emotional quality and the same biological goal, e.g., sex, fear, and (b) engram factors, or acquired aggregates of attitudes united about some one cultural object, e.g., career, religion, but which are obviously diverse in the emotional and desire goal satisfactions involved. Therefore, an erg is "an innate psycho-physical disposition which permits its possessor to acquire reactivity (attention/recognition) to certain classes of objects more readily than to others, to experience specific emotions in regard to them, and to start on a course of action which ceases more completely at a certain specific goal activity than at any other. The pattern includes also preferred behaviour subordination paths to the preferred goal".<sup>7</sup> The terms have been deliberately couched in technical jargon so that the real purpose of the measuring device may remain hidden to the layman or the respondent. The simplified explanation and interpretation of these designated components have been detailed out in a manual of the motivational analysis test or MAT.<sup>6</sup>

In brief, a wide array of attitudes covering various social, clinical, and educational researches, have been systematically factor analysed in recent years and found to yield unitary dynamic traits which are recognizable either as primary drives or as acquired attitude patterns. The former are technically termed as 'ergs', and the latter as 'sentiments'. These dynamic traits constitute the scientific instrument called the Motivational Analysis Test (MAT) which has a set of ten functionary unitary and independent motivational components or factors. One very interesting by-product of the search for objective and reliable devices for measuring motives has been that the devices themselves are found to cluster in a meaningful and replicable fashion. That is, even when the attitude content is held constant across a broad selection

of devices, some devices seem to provide a different type of information than others. In the MAT, at a broad level, the devices cluster into one set that seems to measure the deliberate, organised aspects of motivation (the integrated component) and a second set that measures unconscious aspects of motivation (the un-integrated component). The integrated (I) component more closely reflects the level of satisfaction the individual has attained in some interest area, while the un-integrated (U) component reflects the individual's unsatisfied drive or need level.

An important thing to be noted about the U and I components is that they are essentially uncorrelated. An individual can quite easily exhibit a high need for self-assertion, but be relatively unsuccessful in achieving his goal. In this case, the U assertiveness score would be high while the I assertiveness score would be low. The practical consequence of this relationship between the U and I components is that 20 essentially independent scores (a U score and I score in each of 20 dynamic traits) can be obtained from the MAT answer sheet. These are called the primary scores. Certain combinations of the primary scores generate other useful indicators for interpreting individual profiles. Adding the U and I scores together gives an index of the extent of overall energy investment in the area. This is called the *total motivation* score for that area. Research has also demonstrated that the difference between the two scores (specifically I subtracted from U), provides a useful index of dynamic *conflict* in that area, representing as it does the excess of drive over satisfaction. Together, the 20 possible total motivation and conflict scores are called the *secondary scores*, and they help in the clinical interpretation of MAT and in guiding the psychologist towards a full understanding of the dynamic profile.

### Objective

Since we had a theoretically sound and empirically determined device for the measurement of motivational components, an attempt was made to study the true motives involved in birth planning behaviour, which have so far remained a rather unexplored area. One of the problem areas in family planning is the high rate of drop-out among acceptors of the oral pill in urban areas. A number of studies reveal that educated, married females enthusiastically come forward to accept the oral pill as a contraceptive device. However, several studies report that within a period of 3 months about 80-85 per cent of them discontinue its use, and also do not switch over to other methods. The common reasons for discontinuation are reported to be dizziness, giddiness, and nausea. The frequent psychological effects reported include anxiety, depression, neurosis, loss of libido, etc. However, hardly any indepth psychological study or motivational analysis of continuers and discontinuers seems to have been undertaken. The objective of this investiga-

tion, therefore, was to analyse continuation and discontinuation behaviour within a greater motivational framework. Since it is well known that the motivational traits of a person influence his or her behaviour, it was hypothesised that even behaviour relating to the continuation or discontinuation of contraception would also be correlated with the motivational traits of the acceptor. Thus, the specific objective of this study was to compare the motivational components of the two groups of acceptors, that is, continuers and discontinuers of the oral pill.

### **Sample and Methodology**

A purposive sample of 98 women was drawn from the family welfare clinic of the National Institute of Health and Family Welfare (NIHFW), New Delhi. The clinic is conducted twice a week. On average, 8-10 married, educated women visit the clinic on each working day for consultation and/or replenishment of oral pill supplies. The pill packet bears the batch number which helps one to relate the after-effects of the pill, if any, are not related to variations, if any, in the composition of the pill. All the respondents had been taking the pill regularly for over four months. Fifty-two of them were available for taking the MAT test in small groups during the study period of ten weeks. The NIHFW also had a list of *initial* acceptors who had dropped out or discontinued visiting the clinic after only 2-3 months of pill use. Fortysix such discontinuers were contacted individually for administering the MAT. All the respondents were educated, ranging in educational levels from matriculation to graduation. Their ages varied from 20-31 years with a mean of 27 years. The average number of living children was 2.1. All the respondents resided in the urban areas of Delhi.

In view of the efficiency of the Motivational Analysis Test (MAT) of Cattell et al<sup>6</sup> discussed earlier, Kapoor and Singh's<sup>8</sup> Indian adaptation and standardisation of MAT was used. Its psychometric properties were very satisfactory and Indian norms are available.<sup>9</sup> The ten dynamic structures or motivational factors, that is, the 5 ergs and 5 sentiments and their brief descriptions are given on the next page.

The MAT was administered to the continuers in small groups as and when available and individually to the discontinuers. In doing so, the essential preliminaries for its proper administration were followed and the respondents were made fully conversant with the way of answering each question with the help of instructions and examples given before each sub-test. The average time taken by the respondents for completion of the entire MAT was approximately 60-75 minutes.

As with most tests of Cattell, scoring involved first getting the raw scores, with a key, and then transferring them to standard scores (in stens). These The ten dynamic structures measured in MAT are as follows:

Title	Symbol on the records	Brief Description
<i>ERGS (Drives)</i>		
Mating Erg	(Ma)	Strength of the normal, heterosexual or mating drive (sexual love)
Assertiveness Erg	(As)	Strength of the drive for self-assertion, mastery, and achievement (status motive)
Fear Erg	(Fr)	Level of alertness to external dangers (accidents, etc.)
Narcissism-comfort Erg	(Na)	Level of drive of sensuous, self-indulgent satisfaction
Pugnacity-sadism Erg	(Pg)	Strength of destructive, hostile impulses (competitiveness, "aggressiveness" of a specific kind)
<i>SENTIMENTS</i>		
Self-concept Sentiment	(Ss)	Level of concern about self-concept, social repute and more remote rewards, and about control and understanding
Superego Sentiment	(Se)	Strength of development of conscience
Career Sentiment	(Ca)	Amount of development of interest in a career (learning technical skills, "keeping job")
Sweetheart-spouse Sentiment	(Sw)	Strength of attachment to wife/husband or sweetheart
Home-parental Sentiment	(Hs)	Strength of attitudes attaching to the parental home

were first set down for the U or unintegrated component, and then for the I or integrated component. Initially, raw scores were obtained from the answer sheets with the help of stencil scoring keys. There are four scoring keys—one pair, labelled U1 and U2 for unintegrated, side-1 and side-2, and the other pair labelled 1.1 and 1.2 for integrated, side-1 and side-2. The raw scores from the answer sheets were transferred to the profile sheet for graphical representation.

### *Analysis*

Following the procedures spelt out in the preceding section, the raw scores as well as the final sten scores were transferred, for each of the 98 respondents. Based on the data in Columns 5, 6, 7 and 8 of the profile sheet, sten means

Total motivation sten scores of continuers and discontinuers

Factor	Continuers	Discontinuers
Career sentiment (Ca)	4.4	4.2
Home-parental sentiment (Ho)	6.2	5.1
Fear erg (Fr)	7.3	3.3
Narcissism-comfort erg (Na)	5.2	5.1
Superego sentiment (Se)	7.1	3.2
Self sentiment (Ss)	8.2	3.0
Mating erg (Ma)	7.4	3.2
Pugnacity-sadism erg (Pg)	5.2	5.1
Assertiveness erg (As)	4.6	4.9
Sweetheart-spouse sentiment (Sw)	7.2	4.1

were calculated separately for unintegrated, integrated and conflict levels for each of the ten dynamic traits for both groups, continuers and discontinuers (Figure 1).

To enable us to compare the results of discontinuers with continuers, the profiles of the Total Motivation Scores (Column 7 in the profile sheet) of both the groups is presented graphically (continuers represented by a continuous line and discontinuers by a dotted line). The sten score means of both the groups are also given in the same profile sheet (Columns 5, 6, 7 and 8 of Figure 1).

## Results and Discussion

It has been stated earlier that five of the motivational structures in the MAT are ergs or drives and the remaining five are sentiments, and they together constitute the ten dynamic traits. While interpreting the profiles for continuers and discontinuers of the oral pill, the descriptions of the ten dynamic traits were fully utilised.

From the profile it can be seen that the fear erg (Fr) shows high deviations in both groups. The continuers' sten mean of 7.3 indicates that their level of alertness to external dangers is very high. They are likely to avoid accidents and the main goal is security. On the other hand, the discontinuers' sten mean of 3.3 depicts that their need for safety and security is not high. They are less alert to external dangers. As this dimension is best described as the need for safety and its goal is security, the continuers' group (C) appears to feel secure by using the pill regularly. This group also has a high score on the I component and a high score on the integrated fear erg is interpreted to indicate a strong tendency towards caution, according to which this group aptly behaves. Low scores on the I component on fear usually denotes haphazardness and casualness, and the discontinuers' group (D) behaves as



such with its low score record. Besides there is no conflict (B), and a little less than average score on the U component of this erg for the C group. In contrast, the mean sten on U is greater than the mean sten on I for the D group. Eventually, there is a greater degree of conflict in the D group. This high conflict suggests a conscious denial of danger, which if not properly tackled, could cause difficulty.

Having interpreted the U, I and C scores for the fear erg for the two groups of respondents, the remaining nine components of dynamic structures were similarly analysed. No significant difference was observed between the total motivation sten means (Col. 7, Figure 1) of the two groups in regard to the career sentiment, home-parental sentiment, and the Narcissism-comfort, pugnacity-sadism and assertiveness ergs, and therefore these aspects have not been discussed in detail. In contrast, a highly statistically significant difference at or beyond the 0.01 level was observed between the sten means of the two groups for the superego sentiment, self sentiment, mating erg, and sweetheart-spouse sentiment. For all these components of MAT, including the fear erg, the motivation sten means were significantly and consistently higher, for the C as compared to the D group, and similarly, the conflict sten means consistently showed lower or no conflict as compared to the D-group. The characteristic features of these four components, i.e. Se, Ss, Ma, and Sw have been delineated below.

### *Superego Sentiment*

The very high mean score on the I components observed in the case of C group respondents indicates strong satisfying experiences involving ethical and moral relationships. The C group therefore, does not show any inhibition in discussing birth planning problems with the clinic staff. This group does not suffer from any tension either. On the other hand, the D group had very low scores on the I component as well as total motivation, resulting in a high score for the conflict factor. Since superego is a controlled factor (by its very nature according to Freudian psychology), the D group has poor control over its family planning behaviour.

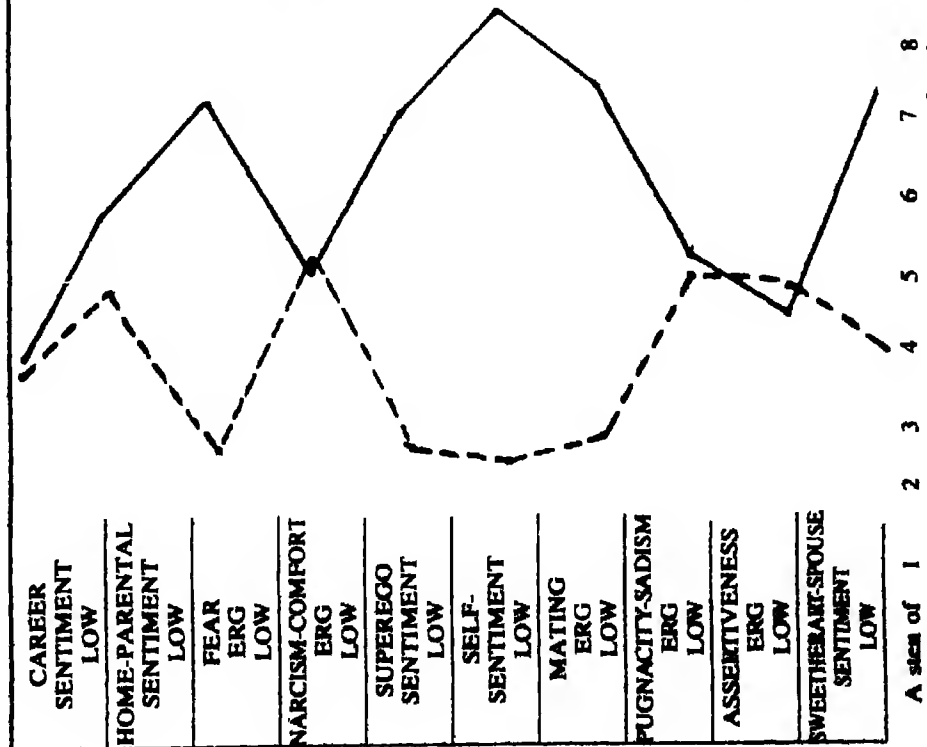
### *Self Sentiment*

This factor grows out of the individual's investment of motivation in himself and his social reputation. It is part of general foresight and planning in life and is an effort to build one's potential to meet future unforeseen emergencies. Considered from this angle, this factor has been found to be most potent and strongest in this study. It may be noted that the C group obtained the lowest score on this, indicating the widest group gap. As a result, this group has almost no conflict while the D group has a high conflict score. The C group also scored the highest on the I component, which reveals motiva-

## MAT (Motivation Analysis Test) DYNAMIC STRUCTURE PROFILE

STANDARD TEN SCORE (STEN)  
Average

1 2 3 4 5 6 7 8 9 10



A sten of 1 2 3 4 5 6 7 8 9 10 is obtained

Final Sten Scores				Final Sten Scores			
U	I	Total Motivation (U+I)	Conflict (U-I)	U	I	Total Motivation (U+I)	Conflict (U-I)
5	6	7	8	5	6	7	8
(11) 5.1	(21) 5.2	(31) 4.4	(31) 6.1	(11) 5.4	(21) 5.0	(31) 4.2	(31) 6.3
(12) 5.2	(22) 7.1	(32) 6.2	(32) 4.3	(12) 5.8	(22) 5.1	(32) 5.1	(32) 5.4
(13) 5.2	(23) 8.3	(33) 7.3	(33) 3.2	(13) 5.3	(23) 4.4	(33) 3.3	(33) 7.1
(14) 5.3	(24) 6.1	(34) 5.2	(34) 5.1	(14) 5.4	(24) 6.3	(34) 5.1	(34) 5.0
(15) 5.1	(25) 8.2	(35) 7.1	(35) 3.4	(15) 4.3	(25) 5.4	(35) 3.2	(35) 5.3
(16) 4.5	(26) 9.4	(36) 8.2	(36) 1.3	(16) 5.3	(26) 4.4	(36) 3.0	(36) 7.0
(17) 6.2	(27) 7.1	(37) 7.4	(37) 4.3	(17) 5.1	(27) 3.3	(37) 3.2	(37) 3.1
(18) 5.4	(28) 6.3	(38) 5.2	(38) 5.3	(18) 5.2	(28) 6.1	(38) 5.1	(38) 5.2
(19) 5.3	(29) 5.1	(39) 4.6	(39) 5.8	(19) 5.4	(29) 5.0	(39) 4.9	(39) 5.5
(20) 6.3	(30) 7.4	(40) 7.2	(40) 5.1	(20) 5.1	(30) 5.4	(40) 4.1	(40) 6.2

tion towards both self-awareness and self-realisation. A low scorer as is the case with the D group is an underachiever in all areas. Such a group seems to be unwilling to defer gratification to the degree that would be necessary to insure a secure future. The conflict score of the D group indicates that the self-sentiment area is part of the *loser's syndrome*. This is another controlled factor in the dynamic structure which the C group unlike the D group, has full potential to control.

### *Mating Erg*

This dimension measures heterosexual interest directed towards the sexual act itself. It does not necessarily reflect affection or love. The C group gained higher scores for this component on both total motivation and the I component, which shows an openness and willingness to talk about sex and probably to indulge in it also, although the latter is not always true. In most cases, a high I score will indicate active participation in the area, including that of contraception. The low I score of the D group indicates inhibitions in this area.

### *Sweetheart-spouse Sentiment*

This dimension measures more specifically the affection needs of the subject in relation to a person of the opposite sex, but operates independently of the sex or mating erg. The higher score obtained by the C group on this component for total motivation as well as the I component, indicates a high, conscious drive for romantic love relationships. The D group on the other hand, indicates some conflict on this dimension which reflects frustration in the search for affection. Sometimes, this frustration is self-imposed because of the subject's perception of the value system of her peers.

### **Conclusion**

The above findings clearly indicate the motivational profile of continuous users of the oral pill as being very cautious, fear-organised, systematic, planned, and controlled (Se & Ss) with no inhibition or repression of sexual desire (Ma), and a willingness to express the need for affection, as well as to help others in their need for love and affection. In contrast, discontinuers were found to be typical in their casualness, having poor control over their behaviour or their frustration due to unsatisfied needs especially pertaining to sex, love and affection resulting in persistent tension and conflict. Their motivation was decidedly low as compared to continuers.

A major portion of this motivational analysis and pattern is directly corroborated by the recent findings of Mukherjee<sup>6</sup> which relate two core components of modernity values with adoption of family planning. The two values

are subjective efficacy (conceptualised as the belief that outcome of any action depends on one's effort rather than sheer luck), and planning value (which is the importance the respondent attaches to planning ahead).

The two values are covered under our controlled and planning components of motivation notably the dynamic structure of the superego and self-sentiment as already discussed above. In general it can be said that the motivational dimensions of personality are likely to influence one's behaviour on wide ranging areas from entrepreneurship to family planning. Though specific motives may operate in regard to each incident of behaviour, they are mostly within the general motivational and personality framework of the person. The study provides significant insight into the possibility of guidance and counselling for positive birth planning behaviour. It also emphasises that birth planning behaviour must be understood in the context of a wider behavioural framework, though specific suggestions can only be given after undertaking extensive action research in the area.

#### ACKNOWLEDGEMENTS

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# **THE IMPACT OF CONTRACEPTION AND INDUCED ABORTION ON FERTILITY IN INDIA**

**DR. N.P. DAS\***

## **Introduction**

The family planning programme was initiated in India in 1952 in order to control the growth of population, or to be more specific, to reduce the level of fertility. The programme basically aims at popularising the concept of a planned family and thereby creating an adequate demand for contraception. Simultaneously, it tries to meet this demand by making available contraceptive services. The provision for contraceptive methods is made through the adoption of a "cafeteria approach", wherein all methods of contraception are provided and the method choice rests with the individual. Over the years, India has also liberalised the legal restrictions on induced abortion through the adoption of the Medical Termination of Pregnancy Act of 1971, which became effective from April 1972. Policy makers, planners and research scholars have argued that the family planning programme has contributed significantly to fertility limitation in India. However, very little is known about its actual impact on the level of fertility. Such a quantitative analysis has been missing mainly because of the paucity of reliable data.

Whatever the achievements at various levels of the programme may be, unless they exert an influence by bringing about a favourable change in the level of fertility, they will not have served their purpose fully. Therefore, emphasis should be placed on evaluating the programme in terms of its ultimate impact objective.

## **Objective**

The different ways in which programme performance can be subjected to a systematic evaluation in terms of its ultimate impact has been discussed by many authors<sup>1-3</sup>. Perhaps the most logical and easy way of estimating programme impact would be the 'direct method' which takes into account the number of persons who became programme acceptors during a given year. To estimate the extent to which the programme has helped in reducing fertility in the same year, one needs to calculate the potential fertility of the population in the absence of the programme. Based on one of these methods which follows this principle, the present paper attempts to estimate the in-

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fluence of contraception and induced abortion on the level of fertility in India.

## Methodology

### *Derivation of CPR and GIAR*

Prior to the presentation of the model, the data and procedure used to estimate the Couple Protection Rate and Gross Induced Abortion Rate for Indian women have been discussed.

### *Couple Protection Rate (CPR)*

The data used for computing the couple protection rate is taken from the all India Family Planning Survey undertaken by the Operations Research Group, Baroda during 1980-81<sup>4</sup>. The study, a multistage stratified sample survey, was conducted on a representative sample of more than 41,000 households from both urban and rural areas across the country. About 34,831 couples were interviewed on family planning and its related issues. The data on the current use of any modern method of family planning according to the age of the wife, which were used in the present study, are presented in Table 1.

TABLE 1

Current use of family planning methods and proportion of couples effectively protected by age of wife, India, 1981

Age group (years)	Percentage of couples currently using					% couples effectively protected*
	Steril- isation	IUD	Pills	Condoms	All methods	
15-19	0.0	0.0	0.7	2.4	3.1	1.90
20-24	4.5	0.5	1.4	5.3	11.7	9.03
25-29	18.4	0.6	1.3	5.9	26.2	23.22
30-34	29.7	0.7	1.2	5.3	36.9	34.22
35-39	37.6	0.4	0.7	3.6	42.3	40.48
40-44	33.6	0.3	0.3	2.0	36.2	35.19
All ages	22.4	0.5	0.8	4.4	28.1	25.88

\* Estimated by providing due weightage to each method for its use effectiveness. The levels of use effectiveness assumed are 1.0 for sterilisation and the oral pill, 0.95 for the IUD, and 0.5 for condoms.

The proportion of couples effectively protected due to the use of all modern methods of contraception was estimated by providing due weightage to each family planning method for its use effectiveness. The estimated CPR

by the age of wife is also presented in Table 1. It can be seen from this table that the CPR increases with the wife's age. The level of CPR is extremely low in the age group 20-24 and below it. Thereafter, it increases, with almost one out of every four women being effectively protected in the age group 25-29 years, one out every three in the age group 30-34 years and 35-40 per cent in the age group 35-44. The overall level of CPR was observed to be about 26 per cent. The Year-Book published by the Ministry of Health and Family Welfare indicates a slightly lower level of CPR (24 per cent) during 1981.<sup>1</sup> Thus, the reduction in fertility, especially in the younger age groups, cannot be expected to be large.

### *Gross Induced Abortion Rate (GIAR)*

In the absence of other reliable data, age specific gross rates of induced abortion per 1000 pregnancies among Indian women were computed from 1980-81 data on Medical Termination of Pregnancy published by the Ministry of Health and Family Welfare.<sup>2</sup> The total number of pregnancies by age of the wife were roughly estimated from the age specific marital fertility rates and age distribution of currently married women taken from the 1981 census. The observed induced abortion rate was found to be about 14 per 1000 pregnancies which appears to be grossly underenumerated. A significant proportion of the induced abortions takes place outside the programme. Assuming that the reporting of induced abortion was fifty per cent complete in the published data, the adjusted rates of induced abortion were computed by :  $2r/(1+r)$ , where  $r$  is the observed age specific rate of induced abortion. The findings are presented in Table 2.

TABLE 2

Gross induced abortion rate (GIAR) per 1000 pregnancies by age of wife, India, 1981

Age group (years)	Number of reported induced abortions (I)	Number of pregnancies (R)	GIAR* (r)	Adjusted GIAR** ( $\bar{r}$ )
15-19	25,064	2,818,074	8.82	17.49
20-24	92,631	8,211,425	11.15	22.05
25-29	127,884	7,050,846	17.81	35.00
30-34	87,589	4,428,553	19.39	38.05
35-39	42,343	2,744,836	15.19	29.93
40-44	12,934	1,354,081	9.46	18.74
All ages	388,405	26,579,399	14.40	28.40

\* Computed as  $r = I/(R+I) \times 1000$

\*\* Computed as  $\bar{r} = 2r/(1+r)$

As indicated in Table 2, the GIARs are low in all the age groups. They are especially low in the age group 15-19 (17 per 1000 pregnancies), increase with advancing age, and reach maximum values in the age group 30-34 (38 per 1000 pregnancies). The rates however decline thereafter. In a population in which the overall induced abortion rate is about 3 per cent, its influence on the level of fertility is expected to be very small.

### *Demographic Effects of CPR and GIAR*

The fertility curtailing effect of contraception or induced abortion depends upon the interaction of all the reproductive characteristics of the acceptors. In other words, the extent of reduction of the fertility in a population as a result of the use of family planning, varies considerably depending on the level of fecundability, incidence of sterility, incidence of spontaneous pregnancy wastage, and duration of the infecund period following pregnancy termination. The effect of induced abortion on Indian fertility is therefore examined by an application of Sheps' fertility model,<sup>7</sup> details of which and its application to Taiwanese data have been reported by Sullivan et al.<sup>8</sup>

The basic approach followed for estimating the effects of induced abortion on current fertility is as follows: while holding all other input parameters in the fertility model constant, fertility rates are generated under alternative assumptions for induced abortion. In the first segment, induced abortion parameters are set equal to the rates observed at the all India level during 1980-81. In the second segment, induce abortion parameters are set at zero. The percentage difference in the marital fertility rates between the two is a measure of the effect of induced abortion. Similarly, the effect of contraception can also be estimated separately.

By the application of Sheps' model the simulated age specific marital fertility rate can be expressed as:

$$F = 12 \omega (1 - \epsilon)(1 - \delta) \frac{[1 - \{S' + S''(1 - S')\}]}{1 + \omega \left[ \sum_{i=1}^{\infty} \phi_i \theta_i - 1 \right]} \quad (1)^*$$

where

$F$  = the simulated annual age specific marital fertility rate

$\omega$  = the monthly fecundability rate

$S'$  = the proportion of women naturally sterile

$S''$  = the proportion of women effectively protected by modern methods of contraception

$\delta$  = the gross induced abortion rate

$\theta_1$  = the gross early foetal wastage rate



$\omega$  = the gross late foetal wastage rate

$\varepsilon$  = the total foetal wastage rate ( $\theta + \omega$ )

$\theta_3 = \omega (1 - \delta)$

$\theta_4 = (1 - \varepsilon)(1 - \delta)$

$\theta_5 = (1 - \theta_2)$  and

$\phi_2, \phi_3, \phi_4$  and  $\phi_5$  are mean infecund months associated with early and late foetal wastage, live birth and induced abortion respectively.

The expression for age specific marital fertility rate in the absence of induced abortion in the population ( $\delta=0$ ) can be written as

$$F' = \frac{12\alpha(1-\varepsilon)(1-S')(1-S'')}{1 + \alpha(\theta_2\phi_2 + \omega\phi_3)} \quad \dots \dots \dots (2)$$

where

$F'$  = the simulated annual age specific marital fertility rate, when the induced abortion rate ( $\delta$ ) is set at zero.

With the help of equations (1) and (2), the expression for the effect of induced abortion on fertility can be written as

$$E \propto F' - F = \frac{\delta \left( \frac{1-\alpha}{\alpha} + A \right)}{(1-\delta) \left( \frac{1-\alpha}{\alpha} + B \right)} \quad \dots \dots \dots (3)$$

where  $A = \theta_2 (\phi_2 - \phi_5) + \phi_5$

$B = \theta (\phi_2 - \phi_4) + \omega (\phi_3 - \phi_4) + \phi_4$

While estimating the demographic effect of induced abortion in Taiwan, Sullivan et al<sup>8</sup> obtained an almost similar expression using Sheps' model. However, the expression given by them provides approximate effects of induced abortion. The exact effect of induced abortion on fertility can be estimated by the use of the expression given in equation (3). The assumptions involved in the model are similar to those of Sullivan et al.<sup>8</sup>. All women have the same reproductive capacity (i.e. the model's parameters are assigned the values for the group). The reproductive characteristics of women resorting to abortion are equal to average population values. The various parameter values assigned remain fixed throughout the analysis. The most important assumption of the model is that all other determinants of reproductive capacity remain fixed when the value of the induced abortion parameter is reduced to zero. This assumption may appear to be unrealistic but is made

\* If  $\delta$  is set at the observed rate,  $F$  equals the observed rate; if  $\delta$  is zero,  $F$  equals potential fertility ( $F'$ ) in the absence of induced abortion.

because of the uncertainty about the magnitude of change that would occur if there were substitute fertility control practices, such as contraception and abstinence, in the absence of induced abortion. Nevertheless, the estimated demographic effect should be interpreted as the degree of fertility control achieved by induced abortion. This however does not mean that this control would not have been achieved by alternative means, in the absence of induced abortion.

The effect of induced abortion on age specific marital fertility rates was examined using the conventional five year groups. Average age specific values were assigned to the model's parameters. All the parameters used in the model are presented in Table 3.

TABLE 3  
Parameter values used for estimating the age specific effects  
of contraception and induced abortion on fertility

Parameters	Age group (years)					
	15-19	20-24	25-29	30-34	35-39	40-44
<i>Gross foetal wastage rate</i>						
Late ( $\omega$ )	0625	0207	0201	0131	0473	0106
Early ( $\theta_2$ )	1487	1126	0958	1251	1417	.2545
Total ( $\epsilon$ )	2112	1333	1159	1382	1890	2651
<i>Infecund months associated with</i>						
Early foetal wastage ( $\theta_2$ )	5	5		5		5
Late foetal wastage ( $\theta_1$ )	11	11		11		11
Live births ( $\theta_4$ )	17*	18	20	22	23	24
Induced abortion ( $\theta_5$ )*	4	4	4	4	4	4
Gross induced bortion rate ( $\delta$ )	.01749	.02205	.03500	.03805	.02993	.01874
Proportion naturally sterile ( $S'$ )	.111	.032	.032	.111	.269	.507
Proportion effectively protected by contraception ( $S''$ )	.0190	.0903	.2322	.3422	.4048	.3519
Monthly fecundability rate ( $\epsilon$ )	.02995	.06851	.08640	.08605	.07257	.04670

Sources: :  $\omega$  and  $\theta_2$ : estimated by Venkatacharya, K.: *Demography*, 9(3):339-352(1972);  $\theta_2$  and  $\theta_1$  estimated by Mukerji, S. and Venkatacharya, K.: Research Paper Series No. 5, IIPS, Bombay (1967);  $\theta_5$ : arbitrary;  $S''$  and  $\delta$ : see text Tables 1 and 2 respectively;  $\theta_4$  and  $\epsilon$ : estimated by author, the latter based on 1981 ASMFR(F) of Census Fertility rates provided by Yadava et al. in *Proceedings of a Seminar on Recent Developments in the Techniques of Population Analysis and Statistical Inference*, Centre for Population Studies, Banaras Hindu University, Varanasi (1982).

The fecundability parameter is the only independent parameter in the model for which age-specific values were not readily available for Indian women. By rearranging the terms in equation (1), age-specific fecundability was estimated by

$$\hat{a} = \frac{\hat{P}}{(1-\hat{e})(1-\delta) + [\hat{P} (1 - \sum_{i=2}^{\infty} \theta_i \phi_i)]} \dots \dots \dots (4)$$

where

$\hat{a}$  = the estimated age specific fecundability value, and

$P$  = is the monthly fertility rate for fecund women exposed to pregnancy, and is estimated by

$$\hat{P} = \frac{F}{12} \left[ \frac{1}{1 - \{ (S' + S'' (1-S')) \}} \right]$$

The values for the independent parameters in equation (4) are known, and  $P$  values can be estimated from the observed age specific marital fertility rates ( $F$ ). The estimated age specific fecundability values are also presented in Table 3. The estimated values are consistent with the observed marital rates and with the highly effective use of contraception observed among older Indian women.

Using the notations given earlier, the expression for the demographic effect of contraception can simply be obtained by

$$E_c = S''(1-S') \dots \dots \dots (5)$$

where  $E_c$  is the demographic effect of contraception estimated relative to the observed fertility rate ( $F$ ).

The age specific values for  $S'$  and  $S''$  in this equation are known and  $E_c$  values can be estimated.

Thus, the combined demographic effect of induced abortion and contraception ( $E_C$ ) can simply be obtained by

$$E_C = E_A + E_c$$

$$\frac{\delta (1 - \alpha + A)}{(1-\delta) (1 - \alpha + B)} + S''(1-S') \dots \dots \dots (6)$$

Having obtained the age specific estimates of  $E_a$ ,  $E_i$  and  $E_c$ , the corresponding overall demographic effects can be estimated by weighing the age-specific effects proportional to the observed age specific fertility rates. For example, the overall demographic effect of contraception and induced abortion can be computed by

$$\frac{\text{adjusted TMFR} - \text{observed TMFR}}{\text{observed TMFR}}$$

where the observed TMFR is the sum of the observed ASMFRs ( $\sum F$ ). The adjusted TMFR which is the sum of a set of ASMFRs adjusted to compensate for the effect of induced abortion and contraception, is obtained by

$$\text{adjusted TMFR} = \sum F (1 + E_c)$$

Similarly, the overall effect of induced abortion and contraception on the Crude Birth Rate (CBR) can be computed by

$$\frac{\text{adjusted CBR} - \text{observed CBR}}{\text{observed CBR}}$$

where the observed CBR can be obtained by weighing the observed ASMFR proportional to the number of currently married women in a given age group. Similarly, the adjusted CBR is obtained by weighing the adjusted ASMFR proportional to the number of currently married women in a particular age group.

## Results

The estimates of the demographic effect of induced abortion and contraception are presented in Table 4.

The effect of induced abortion on current fertility was observed to be very small in all the age groups. An estimated effect of about 1.4 per cent was noted in the age group 15-24, which increased slightly with advancing age, and reached a maximum value of approximately 2 per cent in the age group 30-34. Thereafter, the effect of induced abortion declined and its estimates were negligible. In other words, it is estimated that in the absence of induced abortion and assuming that there is no compensatory change in alternative fertility behaviour, the fertility rate, at most, would have been greater by 2 per cent in India.

TABLE 4

Estimates of the demographic effects of induced abortion  
and contraceptive use by age, India, 1981

Age group (years)	Observed ASMFR* (births/1000 married women) (F)	% diff.in marital fertility in absence of		
		Induced abortion (E <sub>i</sub> )	Contracep- tive use (E <sub>c</sub> )	Both (E <sub>c</sub> )
15-19	172.41	1.38	1.69	3.07
20-24	301.38	1.33	8.74	10.07
25-29	267.44	1.84	22.48	24.31
30-34	195.49	1.92	30.42	32.34
35-39	127.61	1.60	29.59	31.19
40-44	70.59	1.19	17.35	18.54

\* The level of fertility reported in the form of GMFR (150.4) and ASMFR in the 1981 census fertility data (Govt. of India, 1983 : "Report and Tables based on Five Percent Sample Data", Census of India 1981, Series 1, Part II Special, Office of the Registrar General, New Delhi) appears to be grossly underestimated and needs an upward revision. Assuming the correct level of birth rate to be 34.5 in 1981<sup>5</sup> the corresponding GMFR has been estimated to be 204.2, by dividing the birth rate by the proportion of married females in the age group 15-44 to the total population in 1981. The revised ASMFR (F) for the year 1981 is obtained by inflating the ASMFR reported in the 1981 census fertility data by a factor 1.35757 (204.2/150.4).

Estimates of the fertility curtailing effect of contraception are also presented in Table 4. These were observed to be almost negligible (1.7 per cent) in the age groups 15-19, increase with advancing age, and reach maximum values in the age group 30-39. For this latter age group, it is estimated that in the absence of contraception and assuming no compensatory changes in fertility due to factors which are in no way related to the contraceptive behaviour, the fertility rate would have been greater by 30 per cent. The corresponding effect in the age group 40-44 was however relatively less and is about 17 per cent.

When the effects of induced abortion and contraception were considered together, the estimates were negligible in the age group 15-19 (about three per cent), increased with an increase in age and reached a maximum value of 32.3 per cent in the age group 30-34.

The overall demographic effect of induced abortion and contraception is shown in Table 5.

TABLE 5

**Estimates of the overall effects\* of induced abortion  
and contraceptive use on total marital fertility rate (TMFR) and  
crude birth rate (CBR), India, 1981**

Fertility Measure	Observed fertility rate	Fertility rate adjusted for the effect of		
		Induced abortion	Contraceptive use	Both
TMFR				
Observed	5.67	—	—	—
Expected**	—	5.76	6.67	6.76
Percentage difference	—	1.58	17.52	19.10
CBR				
Observed	34.46	—	—	—
Expected**	—	35.01	40.63	41.18
Percentage difference	—	1.60	17.92	19.52

\* See text for the details of computation.

\*\* Potential fertility of the population

It can be seen from Table 5 that the overall demographic effect of induced abortion for India in 1981 was less than 2 per cent, while it was about 18 per cent in the case of contraception. When both the effects were considered together, their combined effect was estimated to be about 19 to 20 per cent. In other words, in the absence of induced abortion and contraception, the TMFR observed for India in 1981 would have been higher by 19 per cent. The TMFR was expected to be 6.76 which closely approximates the level of fertility observed during the early 1970s (6.64 based on SRS, 1972). The level of CPR during 1970-71 was found to be 11.5 per cent. Thus, in 1981, the family planning programme curtailed fertility by an amount equal to the decline of the preceding ten years.

When the effect of induced abortion and contraception were examined on crude birth rate, the overall effect was found to be the same as that found in the case of the index TMFR. It is estimated that in the absence of induced abortion, the observed CBR for India in 1981 (34.46 per 1000 population) would have been higher by less than 2 per cent. In the absence of contraception, the birth rate of 34.46 in 1981 would have been higher by about 18 per cent, and in the absence of both induced abortion and contraception, the same birth rate would have been 20 per cent higher. In other words, the birth rate would have been about 41 per 1000 population. It may be noted that

this birth rate is based on a 1981 age distribution of currently married women. When the estimates are based on a 1971 age distribution, the birth rate was found to be slightly higher—42 per 1000 population—which closely approximates the observed rate of the early 1970s (41.7 per 1000 population). Thus, a change in the use of induced abortion and contraception under the present family planning programme which gained momentum after 1966, probably accounted for the decline in the birth rate during the last decade.

### **Summary**

The present study has attempted to estimate the effect of induced abortion and contraception on fertility, so as to assess the ultimate impact of the Indian family planning programme which has been in operation since 1952. All India family planning data on the current use of contraception as well as the MTP data published by the Government of India, were used to derive the couple protection rate and gross induced abortion rate for Indian women. These were in turn used to estimate the demographic effect of induced abortion and contraception. The demographic effect was measured as the percentage increase in fertility that would have occurred in the absence of induced abortion and contraception.

The overall induced abortion rate for Indian women was found to be very low (28 per 1000 pregnancies) as per estimates based on 1981 MTP data. The proportion of couples effectively protected by modern methods of contraception was estimated to be about 26 per cent in 1981. Age specific rates of induced abortion and couple protection rates indicated that these rates increased with advancing age and reached maximum values in the age group 30-39.

Estimates of the demographic effect indicated that in the absence of induced abortion, the TMFR (5.67) or CBR (34.46) observed during 1981 would have been higher by less than 2 per cent. In the absence of contraception, the same TMFR or CBR would have been 18 per cent higher. Thus, in the absence of both, the fertility rate would have been higher by about 19 to 20 per cent. Although this decline in fertility may essentially be attributed to the family planning programme, it is not large enough considering that the programme has been in operation for over three decades.

### **ACKNOWLEDGEMENTS**

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# **AN EVALUATION OF WEIGHT STANDARDS AND RECOMMENDED NUTRIENT INTAKE IN THE FIRST YEAR OF LIFE**

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**and**

**PROF.(MRS.) ANNAPURNA SHUKLA\*\***

## **Introduction**

Infants in India continue to be judged by British or American standards of body weight. A third to a half of the infants below six months of age are said to have a weight for age less than the lowest limits of normalcy on the Harvard Scale<sup>1</sup>. Thus, Indian babies are labelled as undernourished by comparing their body weight with their American or British counterparts.

Several workers<sup>2,7</sup> have carried out comprehensive studies covering most aspects of infant growth and development, feeding patterns and nutritional intake, and other socio-economic factors which normally influence the health of infants. These studies need to be supported by investigations in other regions of the country also

The present study is normative in nature as it involves an investigation of the growth and development of normal infants in relation to their nutrient intake during the first year of life. It attempts to compare the observed physical growth of the infant with recommended standards and intake of nutrients by using the 24-hour food recall method to determine the actual intake and comparing it with the standards recommended.

## **Sample and Methodology**

The study was conducted in rural and urban areas adjoining the campus of the Banaras Hindu University. A cross-sectional survey of 610 infants (400 rural and 210 urban) was carried out, and apparently healthy infants, considered as normal, were selected for the study. The infants were undressed completely and their weight was recorded using a portable model of a pair of infant weighing scales having 10 kg units. Nutrient intake was calculated by the 24-hour food recall method from mothers and test feeding was done to calculate the amount of milk consumption by breastfed infants.

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## Results and Discussion

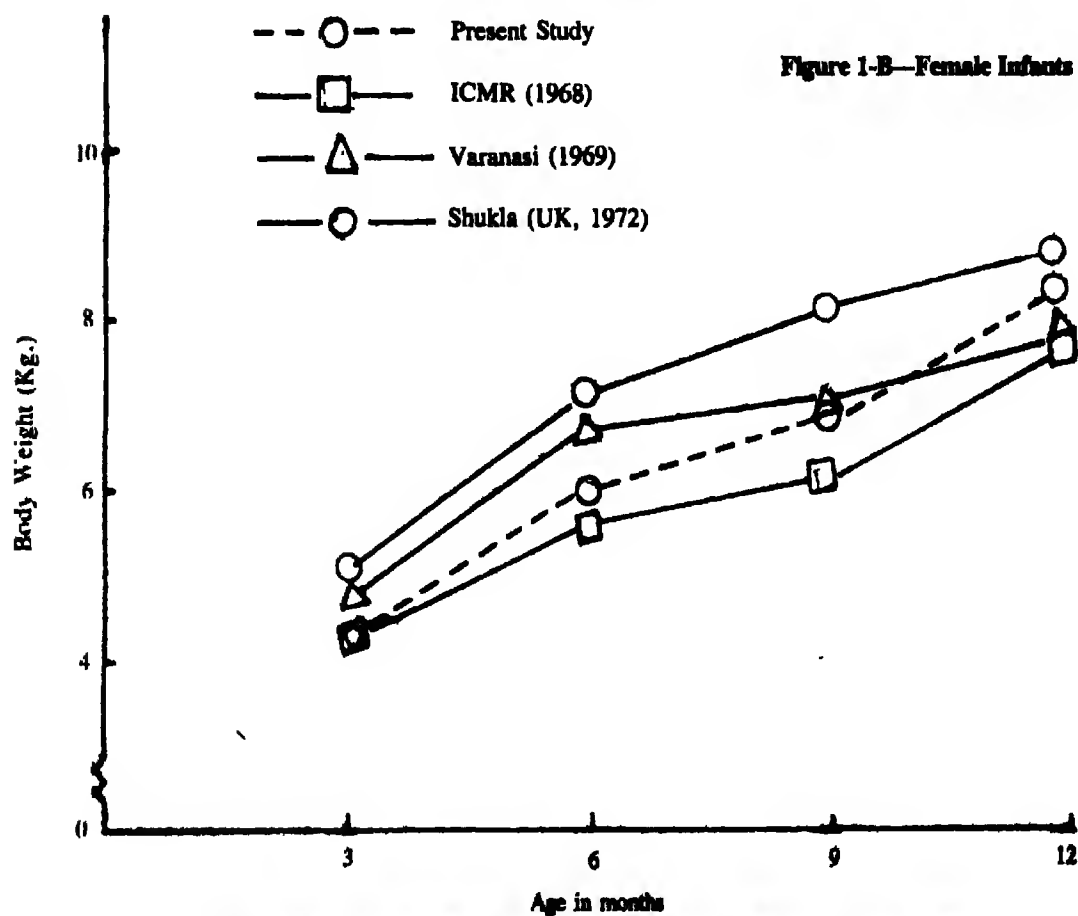
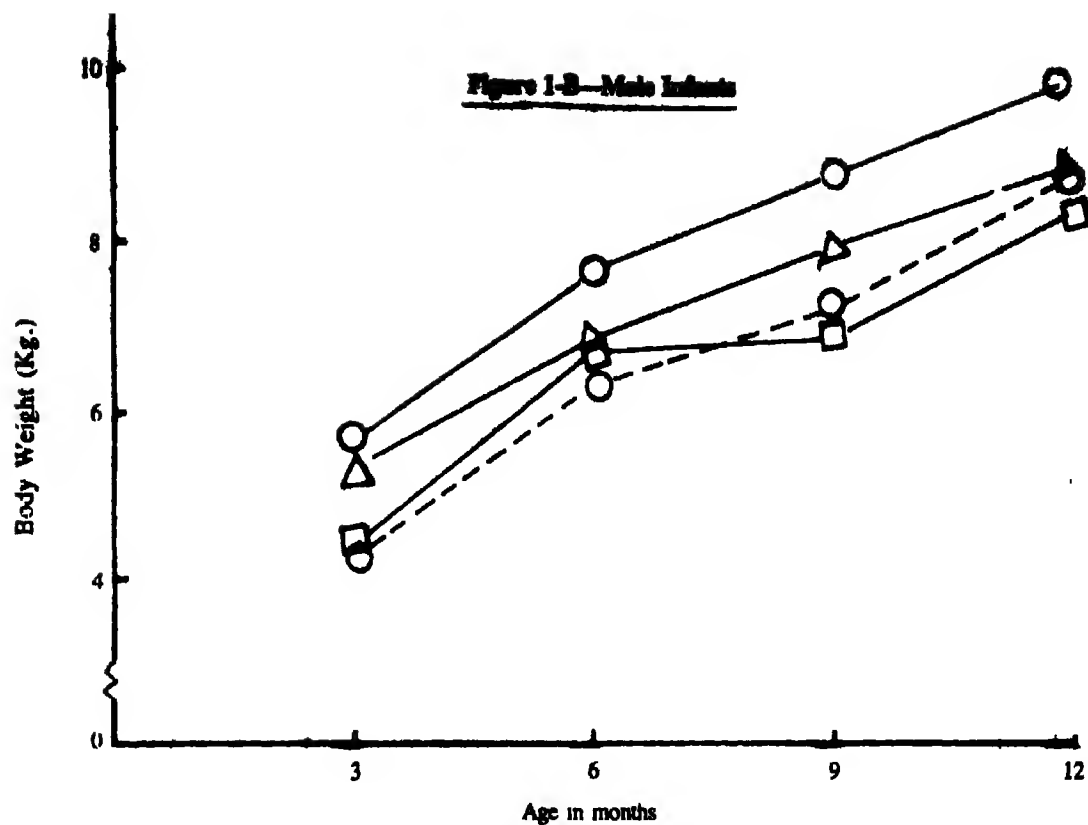
The infants were classified under four age groups—0-3 months, 3-6 months, 6-9 months, and 9-12 months. The mean body weight of male infants was found to be higher in all the four age groups as compared with that of female infants. A similar trend was observed in a comparison of standards given by the Indian Council of Medical Research (ICMR)<sup>8</sup>, and the mean body weight was found to be much lower than that of British babies<sup>9</sup> (Table 1).

TABLE 1

Body weight of infants by sex

Age group (months)		Present study (1985)	ICMR All India (1968)	ICMR Varanasi (1969)	Shukla (1972)
0 - 3	Male	4.3	4.5	5.3	5.7
	Female	4.2	4.2	4.8	5.1
3 - 6	Male	6.3	6.7	6.9	7.7
	Female	6.0	5.6	6.8	7.2
6 - 9	Male	7.3	6.9	8.0	8.8
	Female	6.9	6.2	7.2	8.2
9 - 12	Male	8.8	8.4	8.9	9.9
	Female	8.5	7.8	7.9	9.0

The body weight curve for male infants in the sample was observed to follow the ICMR curve more closely upto 9 months and by the 12 month, the body weight reached exactly that of the Varanasi standard (Figure 1-A). In female babies, the curve ran above the ICMR curve upto 8 months, moved slightly below it at 9 months and ran above it after 18 months ending up between the ICMR and Varanasi standards<sup>10</sup> at 12 months (Figure 2-B; Table 1). These trends in the body weight curves of both male and female infants in the sample firstly confirm that the infants in the Varanasi study had body weights which were generally in conformity with the ICMR standards. It was interesting to observe that male infants in the present study were slightly lighter and female infants slightly heavier than the ICMR standards. This may be a regional characteristic as the caloric intake among both sexes was not very different. It is important to note that in the Varanasi study<sup>10</sup> which was conducted on 204 healthy infants from the educated, middle socio-economic stratum, the body weights of the infants in all the four age groups were much higher than those of infants in the corresponding age



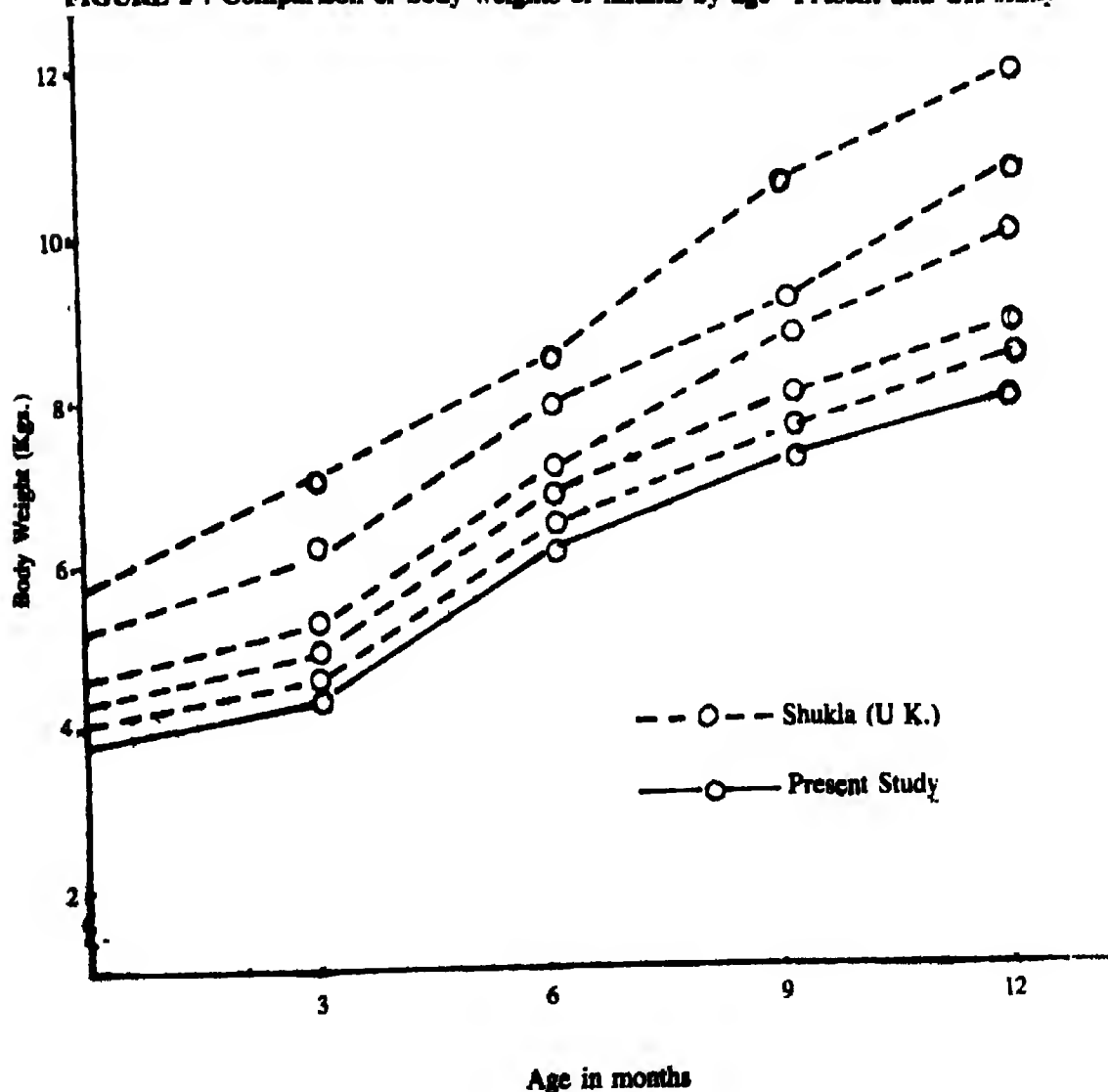
**FIGURE 1 : Body Weight of male and female infants by age and in comparison with other studies**

groups of the present sample, with the exception of the 12-month body weight which was the same in both the studies.

Shukla et al<sup>9</sup> found Tanner's standards<sup>11</sup> questionable. The higher body weight of British babies was found to be due to the presence of a large number of infants who were overweight or obese. After separating the overweight and obese babies, the curve fell to lower than the 50th percentile of Tanner's standards for body weight. It was observed that the 50th percentile curve of the Varanasi babies ran parallel to but slightly lower than the curve of normal babies in U.K. study.

This is a significant finding because it shows that at least during the first year, normal Indian babies are comparable to their normal British counterparts. However, it may be noted that the level of the 50th percentile of normal British and Indian babies was situated much below the 50th percentile of Tanner's standards (Graph 2). This feature was apparent only when the

FIGURE 2 : Comparison of body weights of infants by age—Present and UK study



over-weight and obese babies in the U.K. sample were eliminated. If the sample of Indian babies were to be compared with the 50th percentile of the sample of Shukla's study<sup>9</sup> on British babies, the Indian babies would have been declared under-nourished. In Graph 3-A and 3-B the various percentile curves of the weights of Indian babies are seen at a lower level than Tanner's percentile curves. Since the survey carried out in Varanasi was on normal babies, the percentile curves of the sample are lower not because the Varanasi babies were under-nourished but because Tanner's standards are high. And, Tanner's standards are higher because of the presence of significant numbers of over-weight and obese babies and not of normal babies of higher birth weight (Table 2).

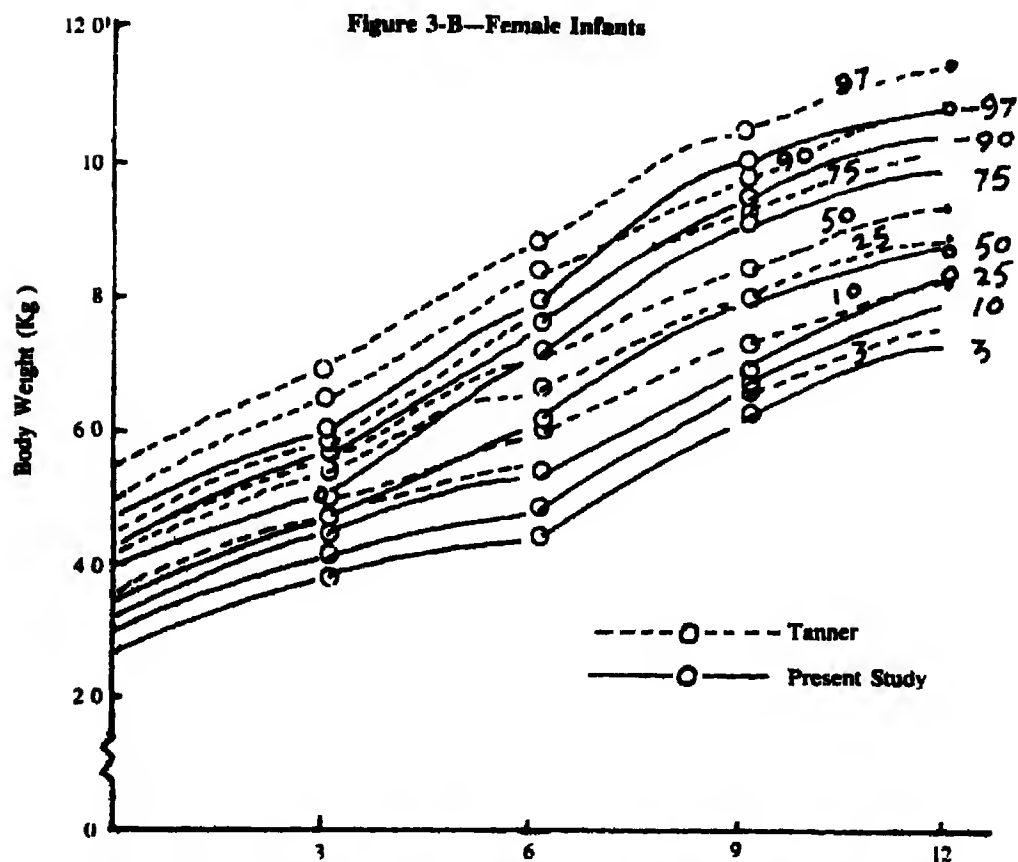
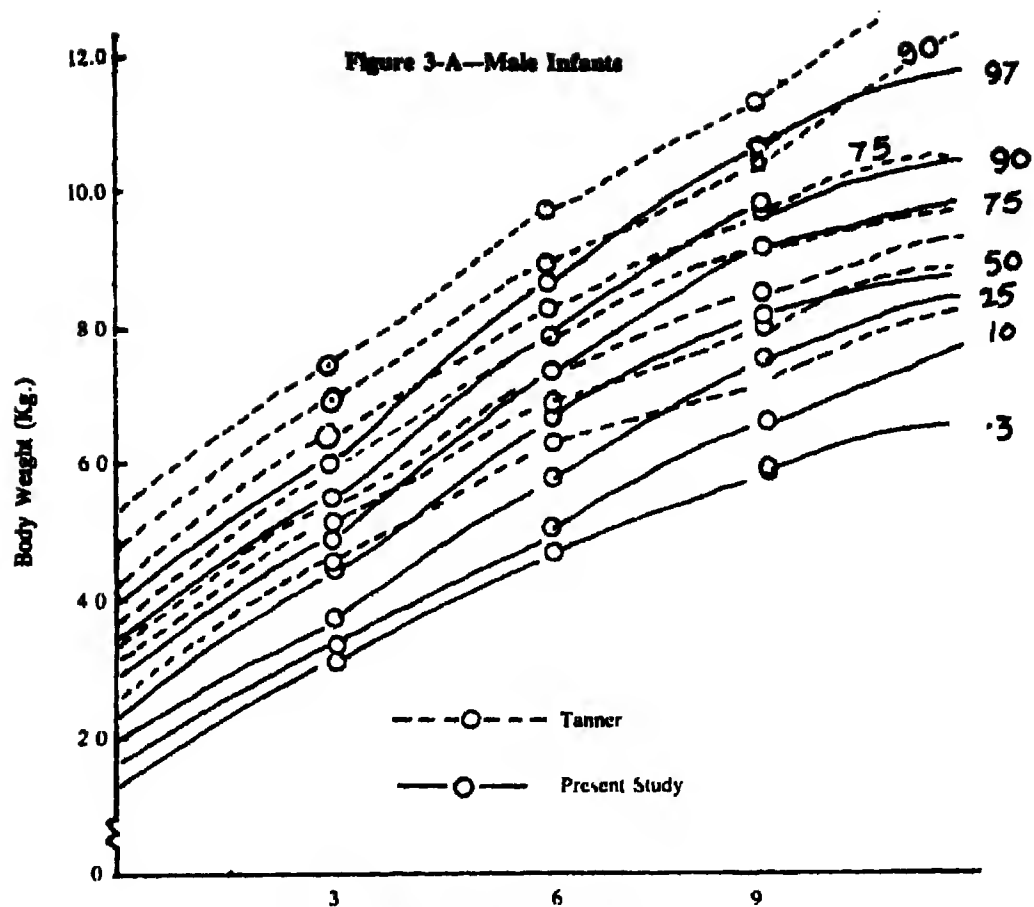
TABLE 2

Percentile values for body weight (kgs.)

Age group	Sex	3rd	10th	25th	50th	75th	90th	97th
0-3 months	Male	2.2	2.4	3.0	4.3	4.6	4.8	4.9
	Female	2.1	2.3	2.7	4.1	4.4	4.6	4.8
3-6 months	Male	3.6	4.2	4.7	6.4	6.7	6.8	7.0
	Female	3.5	4.0	4.6	6.3	6.5	6.6	6.9
6-9 months	Male	5.5	5.7	6.6	7.7	8.4	9.1	9.9
	Female	5.1	5.6	6.5	7.6	8.3	8.7	8.9
9-12 months	Male	7.1	7.6	8.0	8.5	9.6	10.2	10.6
	Female	6.9	7.5	8.0	8.4	9.5	10.1	10.5

A comparison of the nutrient intake of the present sample with that of normal British babies shows a higher level of consumption of all nutrients (Table 3). Yet, the weight curve of Indian babies runs parallel to the normal curve of British babies, thereby indicating that the level of the nutrient intake and the feeding pattern of Indian babies in the present investigation is enough to promote 'normal' optimal growth of the babies, and probably fulfils their genetic potential.

This indicates that the excessive nutrition given to the British babies was quite unnecessary and early weaning as reported in Shukla's study<sup>9</sup> did not offer any advantage to the British babies as far as their body weight was concerned. The nutrient intake of babies in the present sample was not only found to be less than that of British babies, but it was even lower than that recommended by the ICMR; and yet the body weight of the babies in the sample was very much closer to that of the ICMR standard.



**FIGURE 3 : Body weight of male and female infants in percentile values and its comparison with Tanner's standard.**

TABLE 3

Nutrient intake of Varanasi and British infants and its comparison with standards

Age group	Varanasi <sup>11</sup> (1985)	ICMR <sup>8</sup> (1968)	FAO/WHO		Shukla <sup>9</sup> (1972)
Calorie/kg./day					
0-3 months	117	120	120*	Male	136
				Female	149
3-6 months	112		115*	Male	117
				Female	117
6-9 months	96	100	110*	Male	105
				Female	107
9-12 months	96		105*	Male	109
				Female	103
Protein g/Kg./day					
0-3 months	2.0		2.3**	Male	5.2
				Female	5.9
3-6 months	1.6	1.5-2.5	1.6**	Male	4.5
				Female	4.2
6-9 months	1.2		1.5**	Male	3.9
				Female	3.9
9-12 months	1.0		1.2**	Male	3.6
				Female	3.0

\* FAO<sup>13</sup> (1957); 7)

\*\* FAO/WHO<sup>14</sup> (1965)

### Conclusion

A logical conclusion which can be drawn from the above observations is that the cost and economics of production and preparation of baby foods will be cut down tremendously, if we concentrate on feeding our babies just enough to meet their essential nutrient requirements. Therefore, we need to review our policies and the extra budget which is allotted for providing nutritional recipes for young babies not knowing fully well as to what is the upper limit of pushing extra nutrition into the body of a young infant.

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# **THE EFFECT OF ANTENATAL AND NATAL SERVICES ON PREGNANCY OUTCOME, AND HEALTH OF THE MOTHER AND THE CHILD**

**DR. L. RAMACHANDRAN\***

## **Introduction**

While maternal mortality has declined considerably in recent decades, perinatal and infant mortality remain quite high. The main objective of maternal and child health (MCH) care is to reduce morbidity and mortality in the mother and child. Many studies have been undertaken to assess the coverage and quantity of MCH care provided. However, no community-based study has yet been undertaken to find out the effects of antenatal care on (1) the outcome of pregnancy, (2) health of the mother and child (and maternal and child mortality), and (3) its influence on the acceptance of family planning. The present study of pregnant women in rural and urban areas of Dindigul district in Tamil Nadu, was designed to examine the effects of antenatal care on the three variables.

More precisely our study planned to:

1. Compare the antenatal morbidity of women who have received different levels of antenatal MCH services with those who have not.
2. Compare the pregnancy outcome in women who have received different levels of antenatal and natal services.
3. Compare postnatal morbidity and mortality of mothers and children who have received different levels of antenatal, natal and postnatal care services
- 4 Find out the rate of acceptance of family planning among mothers who have been provided with different levels of antenatal services.

## **Study Design**

This was a prospective study in which pregnant women were enlisted from October 1984 to May 1985 and followed till the time of termination of pregnancy and for six<sup>4</sup> weeks after delivery. Respondents were selected from a rural population of 30,896 from 60 villages under six sub-centres in the Thadicombu Primary Health Centre (PHC) near Dindigul in Tamil Nadu and an urban population of 30,000 in Dindigul suburban area. The pregnant women from this population were monitored at regular fortnightly

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intervals by health workers who visited their homes. After the first contact, information was gathered about registration (of cases) at the PHC, how many contacts had been made subsequently, what antenatal care procedures were provided and what morbidity conditions occurred. Unregistered women were also followed up routinely every fortnight to elicit information about their morbidity. A common set of questionnaires was used for all women. Routine fortnightly interviews were conducted by field investigators, all graduates, who had been given special training for the purpose.

Respondents were followed up fortnightly till delivery and all mothers who had successful deliveries were followed up weekly for an additional six weeks. At the end of six weeks, the mothers were interviewed again to find out whether they had accepted family planning or whether they had any intention to use contraception in the near future, and also the source (if any) of advice regarding family planning. After six months, the mothers were contacted again to find out about their family planning status.

## Results

### *Extent of registration for and level of antenatal care*

Table 1 presents a distribution of the sample according to MCH registration status and the education of the respondent. The results suggest that while the majority of all respondents had been registered, a sizeable minority -- over one third of the rural sample and a sixth of the urban sample -- had not been registered for MCH care.

TABLE 1

Profile of sample by MCH registration status and education

	Rural			Urban		
	Total	Registered	Not registered	Total	Registered	Not registered
Total Number	591	378	213	476	400	76
Percentage	100.0	64.0	36.0	100.0	84.0	16.0
Educational status						
Illiterate	67.0	59.8	79.8	35.3	31.3	56.6
Primary/middle	26.6	32.8	15.5	53.4	56.8	35.5
High school	6.4	7.4	4.7	11.3	12.0	7.9
(N)	(591)	(378)	(213)	(476)	(400)	(76)

As expected, the educational status of the respondent has a lot to do with registration status. For example, among rural respondents, while illiterate

women comprised 67 per cent of the total sample, they comprised almost four fifths of the non-registered sub-population; corresponding proportions among the urban sample were 35 per cent and 57 per cent respectively. Clearly, the results suggest a need for concentrated activities to recruit illiterate women to avail of these services.

On average, antenatal registration was done at 23 weeks of pregnancy in rural areas and 21 in urban. Table 2 reports on the level of care. During her entire pregnancy, a typical rural respondent had 1.9 visits with the health worker as compared with 2.6 among urban respondents. In fact, as many as three quarters of rural respondents and 44 per cent of the urban respondents had no more than two contacts with any health worker in the course of their pregnancies.

TABLE 2

**Levels of antenatal care: Number of contacts with health workers and nature of care**

	Rural	Urban
Not registered, none	36.0	16.0
Total registered	64.0	84.0
<i>I No. of visits</i>		
Of registered respondents % making.		
1 visit	47.4	19.0
2 visits	27.2	24.8
3 visits	16.9	29.5
4 visits	5.3	11.5
5 visits	3.2	11.5
Mean number of visits	1.9	2.6
(N)	(378)	(400)
<i>II Level of care received</i>		
Level 1-4	45.0	47.3
Level 5-8	18.5	29.3
Level 9-12	5.3	7.8
Level 13-15	3.2	1.8
Health education only	28.0	14.0
(N)	(378)	(400)

Another means whereby level of care is assessed is via an antenatal care index. This index has been formed from a variety of procedures generally recommended by obstetricians to be observed during pregnancy. For natal care and postnatal care, the analyses were done with reference to the place of birth, the type of attendant at birth, the type of equipment used and minimum procedures generally accepted as essential. Table 2 reports that aside from the 36 per cent and 16 per cent of rural and urban respondents who were

not even registered for care, as few as 8.5 per cent and 9.6 per cent of registered rural and urban respondents respectively received over half of the recommended 15 services during the antenatal period. It appears then that even among the registered respondents, the quality of antenatal care was far less than recommended.

### *Antenatal morbidity and its outcome*

Table 3 reports on antenatal morbidity conditions and their outcomes.

TABLE 3

#### Antenatal morbidity and its outcome

	Rural			Urban		
	Total	Regis- tered	Not registered	Total	Regis- tered	Not registered
Percent reporting:						
Conditions harmful to health	25.4	29.6	17.8	32.4	33.5	26.3
Minor ailments	56.7	57.4	55.4	52.7	54.5	43.4
Normal	17.9	13.0	26.8	14.9	12.0	30.3
Conditions harmful to pregnancy						
Total (%)	25.4	29.6	17.8	32.4	33.5	26.3
Cured (%)	26.7	27.7	23.7	29.9	34.3	20.0
Not cured (%)	73.3	72.3	76.3	70.1	68.7	80.0
Minor ailments harmful to pregnancy						
Total (%)	56.7	57.4	55.4	52.7	54.5	43.4
Cured (%)	29.6	29.5	29.7	39.0	39.4	36.4
Not cured (%)	70.4	70.5	70.3	61.0	60.6	63.6
(N)	(591)	(378)	(213)	(476)	(400)	(76)

About one quarter of the women in the rural group and one third in the urban group reported conditions which can be considered harmful to pregnancy: these included pallor, anemia, vomiting, bleeding, swelling, fits, and heart disease. In addition, about half of each group reported minor ailments. Surprisingly, non-registered respondents comprised a large proportion of the 'normal' conditions (27 per cent and 30 per cent in rural and urban areas respectively).

The results clearly suggest that pregnant women who experience antenatal difficulties are more likely to register for antenatal care than those who have no such difficulties. For example, in rural areas, almost 30 per cent of

registered cases reported conditions harmful to pregnancy as compared to 18 per cent among non-registered cases. Corresponding figures in urban areas were 33.5 per cent and 26 per cent respectively. A follow-up of these cases showed that a high percentage of women suffering from such severe conditions as pallor, vomiting, bleeding and swelling remained uncured among both registered as well as unregistered groups of women. Panel 2 of Table 3 reports that in both rural and urban areas, registered respondents were slightly more likely to be relieved or cured of that condition; nevertheless the differences were not significant. The results raise the possibility that pregnant women who experience conditions harmful to their health may be more likely than others to get themselves registered for antenatal care; it does not necessarily reflect domiciliary registration of antenatal cases.

### *Pregnancy outcome*

Table 4 reports on pregnancy outcome. The results suggest that as many as 94 per cent and 96 per cent of rural and urban respondents delivered live births. The results also indicate that registered respondents in both areas and especially in the urban areas were in fact more likely to deliver a live birth than were corresponding respondents who were not registered.

Table 4 also presents the proportion delivering live births by the level of antenatal care experienced. Surprisingly, among the rural sample, there was little relationship between level of antenatal care and live birth delivery. It is possible that respondents whose level of antenatal care was above average comprised a selected sub-population which registered precisely as a result of severe conditions harmful to health; as such they delivered a somewhat lesser number of live births than others whose level of care was not as intensive. Among the urban sample in contrast, the expected results were observed. Live birth delivery rates increased from 85.5 per cent among respondents who received no antenatal care to 100 per cent among those who scored 9 or more.

In addition, the results show that while those sub-populations among whom no severe morbidity conditions had been experienced were marginally more likely to deliver a live birth than those who experienced a severe condition which was left uncured. This finding was further reinforced by comparing abortions and stillbirths among mothers who had been 'cured' of these morbidity conditions and those who had not.

Surprisingly, among rural respondents, no significant difference was seen in the outcome of pregnancy in relation to the place of delivery or the presence of a trained birth attendant. This probably speaks for the generally poor conditions prevailing in rural hospitals on the one hand and among their trained birth attendants on the other. Among the urban respondents on the other hand,

TABLE 4

## Pregnancy outcome

	Rural			Urban		
	Total	Regis- tered	Not registered	Total	Regis- tered	Not registered
Live births	93.9	95.5	91.1	96.0	98.0	85.5
Abortion	2.5	1.1	5.2	2.1	0.5	10.5
Stillbirths	3.6	3.4	3.8	1.9	1.5	3.9
(N)	(591)	(378)	(213)	(476)	(400)	(76)
<i>% delivering live births by ante natal care index</i>						
0			91.1	85.5		
1-4			96.5	98.4		
5-8			95.7	96.6		
9-12			90.0	100.0		
13-15			83.3	100.0		
Health education only			96.2	98.2		
<i>% delivering live births by status of morbidity condition</i>						
No morbidity condition			96.5	100.0		
Morbidity condition cured			95.7	94.4		
Morbidity condition not cured			90.5	93.1		
<i>% delivering live births by place of delivery</i>						
Hospital			94.6	98.9		
Home trained birth attend			94.7	99.1		
Home untrained birth attend			93.5	84.8		
<i>% delivering live births by previous birth interval</i>						
First birth			92.4	93.4		
0-12 months			91.2	94.6		
12-24 months			95.1	97.0		
24 months +			97.7	100.0		
(N)			(591)	(476)		

cases delivered in hospitals or at home by a trained birth attendant were significantly more likely to result in live births than those in which deliveries were performed at home by an untrained attendant.

Pregnancy outcome was also matched separately against some specific procedures of antenatal care and some characteristics of the mothers. Eliciting the previous history, abdominal examination, vaginal examination, foetal heart examination, blood-pressure examination, haemoglobin and urine examination, administration of iron tablets or supplementary food were the procedures against which the outcome was matched and studied. No difference was seen

between the registered and non-registered women or mothers who had undergone the tests and received nutritional supplements and those who had not.

Finally, Table 4 reveals the expected relationship between the length of the previous birth interval and the probability of delivering a live birth. Though the relationship is relatively weak, there is evidence that while almost all deliveries occurring after a 24 month or longer interval had resulted in live births only about 91 per cent and 95 per cent of deliveries occurring within twelve months of the last birth resulted in a live birth in rural and urban areas respectively.

### *Birth weight*

The mean birth-weight of babies was 2.7 kg. Further, there was no significant difference between rural and urban respondents. Table 5 reports that the birth weights of a total of 7 per cent of rural births and as many as 12.5 per cent of urban births were below normal. The results suggest that maternal education does play a role in birth weight: higher educated women were considerably less likely to give birth to under weight infants than were illiterate women.

TABLE 5

**Birth weight of live births: relationship with education, feeding programme and antenatal condition of mother**

	Rural	Urban
<i>% with birth weight below normal</i>		
<i>by:</i>		
<b>Education</b>		
Illiterate	7.8	15.1
Primary/middle	4.8	13.4
High school +	5.4	11.8
TOTAL	6.8	13.8
<b>Special feeding programme</b>		
Registered, participated	4.7	9.2
Registered, not participated	7.2	16.8
No service	7.6	10.8
TOTAL	6.8	13.8
<b>Ante natal conditions</b>		
Serious	14.7	15.0
Moderate or normal	4.5	11.4
TOTAL	6.8	13.8
(N)	(555)	(457)

A second significant discriminating factor was the mother's antenatal condition, especially in rural areas. For example, the proportion of low birth weight infants increased from 4.5 per cent among those with moderate or normal morbidity conditions to as much as 15 per cent among those with serious morbidity conditions; corresponding differences among urban respondents were 11 per cent and 15 per cent respectively.

Finally, the results suggest that women who participated in the special feeding programme were less likely to report low birth weights than were either registered women who did not avail of this facility or unregistered women. The differences ranged from 4.7 per cent to 7 per cent among rural women and from 9 per cent to 16 per cent among urban respondents.

#### *Natal conditions*

Table 6 presents the proportion of deliveries resulting in a still birth, as well as perinatal and neonatal mortality rates. Among rural respondents, 3.6 per cent of all deliveries were still births, the perinatal and neonatal mortality rates were 59 and 59.5 per 1000 respectively. In urban areas in contrast, mortality was generally lower: 2 per cent of all deliveries were still births, and the perinatal and neonatal mortality rates were 41 and 50 per 1000 live births respectively.

TABLE 6

Stillbirth, perinatal and neonatal mortality rates by  
level of antenatal care and wife's education

	Rural			Urban		
	% Still birth	Perinatal mortality rate	Neonatal mortality rate	% Still birth	Perinatal mortality rate	Neonatal mortality rate
<b>By antenatal care index</b>						
None (0)	3.6	67.9	84.5	3.8	88.6	78.9
1-4	3.4	56.8	52.9	2.1	25.9	37.0
5-8	7.9	105.3	85.7	4.9	73.2	42.7
9-12	4.8	47.6	0.0	0.0	64.5	96.8
13-15	0.0	0.0	0.0	0.0	0.0	142.9
Health education only	0.0	0.0	0.0	3.4	34.5	17.9
Any Care	3.4	50.2	39.7	1.5	30.0	42.5
<b>By mother's education</b>						
Illiterate	4.4	74.9	73.0	4.2	6.6	75.5
Primary/middle	2.0	20.1	27.4	0.8	24.1	36.4
High school +	2.6	52.6	54.1	0.0	39.2	39.2
<b>TOTAL</b>	<b>3.6</b>	<b>59.0</b>	<b>59.5</b>	<b>1.9</b>	<b>40.8</b>	<b>50.3</b>
	(N)	(576)	(576)	(555)	(466)	(466)



The results suggest that the registration for antenatal care is powerfully and as expected negatively associated with the proportion of still births and perinatal and neonatal mortality rates. In the case of rural respondents for example, registered respondents reported perinatal and neonatal mortality rates of 50 and 39.7 per 1000 live births as compared with 68 and 85 among non-registered women. Corresponding urban rates were equally telling: perinatal and neonatal mortality rates among registered cases were 30 and 42.5 per 1000 live births, compared with 89 and 79 among non-registered cases.

Nevertheless, the level of care received plays an erratic role in explaining mortality differentials. Women at level 13-15 uniformly reported no mortality; however, those at lower levels did not report progressively lower mortality rates as expected, again questioning the quality of antenatal care

Similarly, the results do not suggest a clear effect of maternal education on mortality. It is clear that illiterate women reported higher rates of still births, perinatal and neonatal mortality rates; but women with some education did not experience necessarily higher mortality rates than did those with higher education.

As far as maternal mortality is concerned, there had been four maternal deaths among rural respondents and two among urban respondents. Maternal mortality rates were then 67.68 per 10000 live births among rural respondents and 42.01 among urban respondents.

#### *Postnatal family planning status*

The study attempted to follow up respondents upto six weeks and six months following delivery in order to ascertain family planning status. The results are presented in Table 7.

TABLE 7

#### Postnatal family planning status by MCH care

	Rural	Urban
Family planning acceptance rate at six weeks	11.2	19.5
<i>By ante natal registration status</i>		
Registered	12.8	20.9
Not registered	8.4	12.0
<i>By natal care</i>		
Had trained natal care	12.4	30.3
Did not have trained natal care	10.1	6.0
Family planning acceptance rate at six months	8.3	5.5

\* A total of 571 and 472 respondents were available for postnatal follow up at six weeks

\*\* A total of 456 and 345 respondents were available for postnatal follow up at six months

Some loss to follow up has occurred, especially at six months as a result of women returning to their husband's homes. At six weeks, as many as 97 per cent and 99 per cent of rural and urban respondents respectively were successfully followed up; by six months however, 77 per cent of rural respondents and 72 per cent of urban respondents could be followed up. Family planning status was hence elicited only from those respondents who were followed up. The results indicate that by six weeks, as many as 11.2 per cent of rural respondents and almost a fifth (19.5 per cent) of urban respondents had accepted some method of family planning. Corresponding rates at six months were surprisingly low, 8.3 per cent and 5.5 per cent respectively. Obviously MCH care had no particular influence on the acceptance of contraception. The possibility also exists of selectivity among acceptors lost to follow up by six months postpartum.

### Discussion

The main purpose of the study was to examine the effects of antenatal and natal care on pregnancy outcome and the health of the mother and child. The selection of the sample of mothers was designed to give us, in the natural course of the study, an in-built control of mothers who had been contacted, registered or attended to by health workers of the existing health infrastructure as well as mothers who had not been registered and given antenatal care, used here as a comparison group.

Confirming with the results of earlier evaluation studies conducted in India<sup>1-2</sup> the results of this study suggest poor coverage of antenatal care. As many as a third of the rural sample and a sixth of the urban had not even been registered; once registered, the overwhelming majorities of both rural and urban respondents received fewer than eight of the fifteen recommended services or were provided with health education only. The results also suggest that registration for antenatal care is related with the extent of early complications a woman experiences - in other words, if she experiences difficulties she is more likely to get herself registered at the PHC. There is little evidence that pregnant women are routinely registered by PHC staff.

A close scrutiny of the tables shows that the antenatal registration status of the mother has had no more than a mild effect on the outcome of pregnancy. There were at best a few more abortions and still births among the women who had not been registered. It was also found that abortions and still births were more frequent among women who had antenatal morbidity which was not cured. In the women in whom danger signals had been identified and treated, there were fewer abortions and stillbirths.

Another sad conclusion on the quality of antenatal care is that both registered and unregistered respondents with severe conditions or minor

ailments appear to be *equally* likely to be cured; in other words, antenatal care was at best only marginally more likely to relieve any morbidity condition than no care at all. This reflects the poor quality of antenatal care. However, according to Ramanujam,<sup>3</sup> in an earlier study, complications as such were few and they concluded, "in the light of the above findings we feel that all women really do not require the number of antenatal visits and examinations prescribed. Clinical examination and laboratory tests may be done for selected or suspected cases."

Another reflection on the quality of maternal care is the fact that no clear differences were noticeable in the outcome of deliveries at home and at institutions. A WHO multicentric study<sup>4</sup> of perinatal morbidity and mortality had shown a similar finding. In India, nearly 80 per cent of women are delivered at home and difficult cases are sent to the hospital and that too (very often) only after a problem had arisen. Our study also found evidence for this, the fact that the number of still births is slightly higher in institutions indicates this.

Finally, the results suggest that a somewhat smaller proportion of registered respondents gave birth to low birth weight babies. Among them, mothers who had benefitted from supplementary feeding showed a better trend of baby birth weight. The results offer considerable support to the argument that serious adverse conditions during the antenatal period correspondingly have an adverse effect on birth weight. Finally, as expected, low birth weight is affected by social and economic status: as maternal education increases, the probability of having a low birth weight infant declines consistently in both sub-populations.

Correspondingly, there is strong evidence that respondents who were registered for antenatal care were significantly less likely to experience perinatal and neonatal mortality than were respondents who had not been registered. The magnitudes of the differences in mortality are significant. This finding offers the most convincing argument stressing the need and importance of antenatal care. Similar findings have been reported in a 1982 study near Pondicherry by Srinivasa and Venkatesh.<sup>5</sup>

As regards family planning acceptance subsequent to delivery, the results indicate that a fair proportion of respondents who have experienced a successful delivery have in fact already adopted some method of family planning within the first six weeks. While the differences between registered and unregistered mothers are not significant enough to infer that MCH care has had any definite influence on the acceptance of contraception, registered respondents are more likely to adopt contraception post nally than are non-registered respondents. This finding is in accordance with the finding in some earlier studies including a retrospective study of MCH beneficiaries in this

area<sup>6</sup> which tried to address the issue of integrated service delivery and observed that the results were not conclusive enough to prove the hypothesis that acceptance of family planning would be greater where programmes offered basic health care along with family planning.<sup>7-9</sup>

## Conclusions

Antenatal and natal care have a definite place in ensuring the reduction of perinatal and neonatal morbidity and mortality and to a lesser extent also infant mortality. However, it may not be necessary to insist on the various procedures of clinical and laboratory examination at every contact. Instead, a careful watch can be kept on signs including previous bad obstetric history and symptoms like oedema, bleeding, anaemia, etc. and treatment instituted whenever necessary.

Where malpresentations occur, if they are identified in the third trimester, delivery in the hospital can be advised and ensured. It is also necessary to give adequate and proper treatment to all antenatal morbidity conditions even if they are minor ones.

Antenatal care can be reorganised as follows :

1. Registration of pregnancies.
2. Health education and advising women to report any adverse signs and symptoms and taking an accurate history of previous pregnancies.
3. Supplementary food (where feasible);
4. Iron administration;
5. A check-up with abdominal examination and palpation in the seventh month;
6. Tetanus immunisation.

Educating women to report anything that appears to be wrong will be much more essential, useful and meaningful than making routine visits as a ritual.

The hypothesis that effective MCH care will contribute to greater family planning acceptance has received some limited support from this study. While acceptance of family planning depends mainly on the educational and motivational efforts, the experience of a healthy pregnancy and baby may also influence the decision to adopt a method of family planning. An integrated approach for health care has many advantages (of which family planning acceptance is merely one); one precaution that needs to be taken is that overwhelming accent on family planning should not affect the quantity and quality of MCH care.

Overall the results cry out for a better organised maternal health delivery system. These results suggest that the current system does not appear to be

comprehensive, but rather ad hoc in terms of registration of cases and both the quantity and quality of regular follow up. Many of the expected relationships have not been observed or are only weakly revealed as a result.

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# **FAMILY WELFARE SERVICES IN ONGOLE TALUKA OF PRAKASAM DISTRICT, ANDHRA PRADESH**

**DR. T. LAKSHMAMMA\***

## **Introduction**

The family welfare programme continues to occupy an important place in our socio-economic development plans. One of the important aspects of the programme is the promotion of the health of mothers and children. Although the delivery of medical care to pregnant women (mother and child health services) and young children occupies high priority in health ministries throughout the developing world, progress has generally been disappointingly slow. In this context, an awareness of maternal and child health services, and their easy availability assumes importance. Providing family planning information and services can help improve the success of maternal and child health programmes by enabling couples to avoid high risk pregnancies and births. Thus, family planning would continue to be integrated with a package of health services through an ever-expanding outreach system.

## **Objective**

This study, therefore, was carried out to assess the knowledge and utilisation of family welfare services, including maternal and child health services, among currently married women in the reproductive age group.

## **Sample and Methodology**

The data required for the study were collected in 1985, from Ongole Taluka, one of the advanced talukas of Prakasam District in Andhra Pradesh. To facilitate a wider comparison, the sample, drawn by the stratified cluster random sampling technique, was divided into rural and urban. The urban sample of 200 married women, was drawn from Ongole town, while four villages of Ongole taluka provided the rural sample of 400 married women. Thus, the total sample size of the study was 600. The sampling unit was "a currently married women in the reproductive age group, with or without children." The data were collected with the help of a schedule.

The respondents were categorised into three groups: "not responsible

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parents'', 'moderately responsible parents'' and 'responsible parents'', with the help of a scoring system. Different socio-economic variables and demographic variables were considered to determine the status of responsible parenthood. The scores given for each variable or item were zero (0), one (1) and two (2). Scores were assigned depending upon the answers provided by the respondents for each question. For example, when the question posed to the respondents was, 'What is the ideal interval between marriage and first conception?', the answers would be 'less than one year', 'two years', 'three years and above'. The score values given to these answers were 0, 1 and 2 respectively. The answers to all the question were scored in this fashion. Based on the score values, the respondents were classified into the three above-mentioned categories as follows

1. 'Not responsible parents': respondents whose score value was equal to or less than 49 per cent of the total score.
2. 'Moderately responsible parents': Respondents whose score value was between 50 to 59 per cent
3. 'Responsible parents': Respondents whose score value was equal to or more than 60 per cent

The status of responsible parenthood was cross-classified using different variables

Responsible parents were considered to possess essential knowledge on various aspects such as marriage, healthy pregnancy and motherhood, and enlightened parenthood, and finally, to translate it into practice. If parents have the right kind of knowledge in these areas, it would lead to a better and developed society and help children to lead a good life.

The study is confined to mothers though strictly parents include both the mother and father. Since problems concerning pregnancy and the rearing of children are related to women, the term parenthood is taken to mean, and confined to, the mother only, and is used for the sake of convenience

## **Results and Discussion**

### ***Regular health check-up during pregnancy***

Making regular visits to the clinic for a health check-up during pregnancy is very important for both the mother and the baby she is carrying. In the present study, as many as 80 per cent of the respondents (urban: 82 per cent; rural: 76 per cent) claimed to have had regular health check-ups during pregnancy (Table 1).

This may be due to a reporting error in that some respondents may have visited the doctor only once for a particular problem, but could have claimed to have visited him regularly. Category-wise, the highest proportion of 'responsible' respondents (99.0 per cent) had received regular health check-

TABLE 1

**Distribution of respondents by reasons for not taking a regular check-up during pregnancy**

Parent-hood status	Reason for not having a regular check-up							Total
	Had check-up	No help at home	No habit of going to hospital	Not necessary	No answer	Due to fear	Ignorance/ Poverty	
<b>URBAN</b>								
"Not responsible"	26 (55.3)	—	5 (10.6)	16 (34.0)	—	—	—	47 (26.7)
"Moderately responsible"	54 (84.6)	1 (1.5)	—	6 (9.2)	2 (3.1)	2 (3.1)	—	65 (37.0)
"Responsible"	63 (98.4)	—	—	1 (1.6)	—	—	—	64 (36.3)
Sub-total	142 (80.7)	1 (0.6)	5 (2.8)	23 (13.1)	2 (1.1)	2 (1.1)	—	176 (100.0)
<b>RURAL</b>								
"Not responsible"	104 (62.3)	2 (0.6)	7 (4.2)	48 (28.7)	—	—	6 (3.6)	167 (50.0)
"Moderately responsible"	120 (92.3)	—	4 (3.1)	6 (4.6)	—	—	—	130 (38.9)
"Responsible"	37 (100.0)	—	—	—	—	—	—	37 (11.1)
Sub-total	261 (78.1)	2 (0.6)	11 (3.3)	54 (16.2)	—	—	6 (1.8)	334 (100.0)
<b>TOTAL</b>								
"Not responsible"	130 (60.7)	2 (0.9)	12 (5.6)	64 (29.9)	—	—	4 (2.8)	214 (41.9)
"Moderately responsible"	174 (88.7)	1 (0.5)	3 (2.1)	12 (6.2)	2 (1.0)	2 (1.0)	—	195 (38.3)
"Responsible"	100 (99.0)	—	—	1 (0.9)	—	—	—	101 (19.8)
Grand Total	404 (79.0)	2 (0.4)	16 (3.1)	77 (15.1)	2 (0.4)	2 (0.4)	6 (1.2)	510 (100.0)

ups, followed by the "moderately responsible" (88.7 per cent), and "not responsible" respondents (60.7 per cent). The trend was similar in both urban and rural areas. About 15 per cent of the respondents felt that it was not necessary to go for a health check-up during pregnancy.



### *Anti-tetanus Injections*

Anti-tetanus injections taken during pregnancy help avoid the risk of maternal mortality. However, only a fifth of the respondents (21.0 per cent) had taken the anti-tetanus injection during their last pregnancy. This proportion was about 39 per cent among urban respondents and as low as 12 per cent among their rural counterparts (Table 2).

Among respondents who had been protected against tetanus, the highest proportion belonged to the "responsible" category (37 per cent), followed by the "moderately responsible" (22.6 per cent) and "not responsible" (11.7 per cent) respondents. The trend among the rural and urban sample was observed to be similar.

### *Iron and Folic Acid Tablets*

A very low proportion (20.6 per cent) of respondents in the study area were found to have received iron and folic acid tablets. Among those who did so, 39 per cent were from urban areas and only 10.8 per cent were from the rural areas (Table 2). Again, more respondents from the "responsible" group (37.6 per cent) as against the "moderately responsible" (21.0 per cent) and "not responsible" groups (12.1 per cent) had availed of this service.

The reasons for not taking a tetanus toxoid injection and iron/folic acid tablets were generally "don't know" and "nobody gave it to me". Hence it is clear that these antenatal services were not adequately utilised by the respondents in the study area. There are two factors relevant to this—lack of all-round provision of maternal and child health services and lack of awareness among the people about MCH services.

### *Immunisation of Children*

Immunisation is very essential for preventing certain common communicable diseases among children. In the study area, about 60 per cent of the first-born children of the respondents were found to have been immunised against various childhood diseases. The proportion ranged from 72 per cent in the urban area to 54 per cent in the rural (Table 3).

Most of the first-born immunised children belonged to respondents from the "responsible" group (86.1 per cent) as against "moderately responsible" (64.6 per cent) and "not responsible" (43.5 per cent) respondents. This trend was common to both the urban and rural samples. The reasons given by the respondents for not immunising their children again indicated a lack of knowledge or non-availability of these services.

### *Adoption of Family Planning*

All the respondents were aware of the different types of family planning

TABLE 2  
Distribution of respondents by reasons for not taking the anti-tetanus injection and iron/folic acid during pregnancy

Status of parenthood	Reason for not taking the anti-tetanus injection				Reason for not taking iron/folic acid			
	Taken	Nobody gave it	Don't know about it	No answer	Total	Taken	Nobody gave it	Total
<b>URBAN</b>								
..Not res- ponsible..	12 (25.5)	—	3 (6.4)	32 (68.1)	47 (26.0)	14 (29.8)	—	47 (26.7)
..Moderately responsible..	23 (35.4)	3 (4.6)	1 (1.5)	38 (58.5)	65 (36.9)	22 (33.8)	—	65 (36.9)
..Responsible..	33 (51.6)	4 (6.3)	—	27 (42.2)	64 (36.4)	33 (51.6)	2 (3.1)	64 (36.4)
Sub-total	68 (38.6)	7 (4.0)	4 (2.3)	97 (55.1)	176 (100.0)	69 (29.2)	2 (1.1)	176 (100.0)
<b>RURAL</b>								
..Not res- ponsible..	13 (7.8)	143 (85.6)	—	11 (6.6)	167 (50.0)	12 (7.2)	145 (86.8)	107 (50.0)
..Moderately responsible..	21 (16.2)	106 (81.5)	—	3 (2.3)	130 (38.9)	19 (14.6)	107 (82.3)	130 (38.9)
..Responsible..	5 (13.5)	30 (81.1)	—	2 (5.4)	37 (11.1)	5 (13.5)	30 (81.1)	37 (11.1)
Sub-total	39 (11.7)	279 (83.5)	—	16 (4.8)	334 (100.0)	36 (11.0)	282 (84.4)	334 (100.0)

TABLE 2 (Contd.)

Status of parenthood	Reason for not taking the anti-tetanus injection				Reason for not taking iron/folic acid				
	Taken	Nobody gave it	Don't know about it	No answer	Total	Taken	Nobody	Don't know gave it	Total about it
TOTAL									
"Not responsible"	25 (11.7)	143 (66.8)	3 (1.4)	43 (20.1)	214 (42.0)	26 (12.1)	145 (67.8)	43 (20.1)	214 (42.0)
"Moderately responsible"	44 (22.6)	109 (55.9)	1 (0.5)	41 (21.0)	195 (38.2)	41 (21.0)	107 (54.9)	47 (24.1)	195 (38.2)
"Responsible"	38 (37.6)	34 (33.7)	—	29 (28.7)	101 (19.8)	38 (37.6)	32 (31.7)	31 (30.7)	101 (19.8)
Grand Total	107 (21.0)	286 (56.1)	4 (0.8)	113 (22.2)	510 (100.0)	105 (20.6)	284 (55.7)	121 (23.8)	510 (100.0)

TABLE 3

**Distribution of respondents by immunisation  
of first-born child**

Status of parenthood	Immunisation given				Total
	Nil	DPT,BCG Polio, Smallpox	Only Smallpox	All	
<b>URBAN</b>					
"Not res- ponsible"	22 (46.8)	7 (14.9)	4 ( 8.5)	14 (29.8)	47 (26.7)
"Moderately esponsible"	11 (16.9)	9 (13.8)	7 (10.8)	38 (58.5)	65 (36.9)
"Responsible"	4 ( 6.3)	6 ( 9.4)	2 ( 3.1)	52 (81.3)	64 (36.4)
Sub-total	37 (21.0)	22 (12.5)	13 ( 7.4)	104 (59.1)	176 (100.0)
<b>*RURAL</b>					
"Not res- ponsible"	84 (50.3)	17 (10.2)	11 ( 6.6)	55 (32.9)	167 (50.0)
"Moderately responsible"	38 (29.2)	14 (10.8)	13 (10.0)	65 (50.0)	130 (38.9)
"Responsible"	8 (21.6)	5 (13.5)	—	24 (64.9)	37 (11.1)
Sub-total	130 (38.9)	36 (10.8)	24 ( 7.2)	144 (43.1)	334 (100.0)
<b>*TOTAL</b>					
"Not res- ponsible	106 (49.5)	84 (11.2)	15 ( 7.0)	69 (32.2)	214 (42.0)
"Moderately responsible"	49 (25.1)	23 (11.8)	20 (10.3)	103 (52.8)	195 (38.8)
"Responsible"	12 (11.9)	11 (10.9)	2 ( 2.0)	76 (75.2)	101 (19.2)
Grand total	167 (32.7)	55 (10.9)	37 ( 7.2)	248 (48.6)	510 (100.0)

methods (both permanent and temporary) and their popular names. Half of them (50.2 per cent) were current adoptors of temporary and permanent methods at the time of survey. While 59.0 per cent of the urban respondents were practising family planning, the percentage of contraceptors among the

rural sample was 45.8 (Table 4). The rate of adoption of family planning was higher among the "responsible" (73.5 per cent) as compared to the "moderately responsible" (54.9 per cent) and "not responsible" (36.1 per cent) respondents in both urban and rural areas.

Among current family planning adoptors, the majority had accepted tubectomy followed by vasectomy.

TABLE 4

Distribution of current family planning adoptors by parenthood status

Status	Urban		Rural		Total	
	Total sample	Current FP adopters	Total sample	Current FP adopters	Total sample	Current FP adopters
"Not responsible"	56	23 (41.1)	207	72 (34.8)	263	95 (36.1)
"Moderately responsible"	77	45 (58.4)	147	78 (53.1)	224	123 (54.9)
"Responsible"	67	50 (74.6)	46	33 (71.7)	113	83 (73.5)
Total	200	118 (59.0)	400	183 (45.8)	600	301 (50.2)

#### *Willingness to Use a Birth Control Method for Health Reasons*

About 77.5 per cent of the non-adopters were willing to accept a birth control method if they were to be told by a physician that further pregnancies would harm either their own health or the health of the child. This willingness to regulate family size was highest among the "responsible" group of respondents (94.4 per cent) than among the "moderately responsible" (76.4 per cent) and "not responsible" (75.6 per cent) groups, in both the urban and rural areas studied (Table 5).

#### **Conclusion**

It is clear from the above findings that both knowledge of maternal and child health services and their utilisation in the study areas was not adequate. A very low proportion of women had received the usual antenatal services such as tetanus toxoid injections and iron/folic acid tablets in both rural and urban areas; the proportion thus reached being rather low in the former. The coverage of first-born children by immunisation services was also unsatisfactory. Current family planning adoption, however, was above the state average.

TABLE 5

**Distribution of non-adopters by parenthood status and willingness to adopt FP for health reasons**

Status	Urban		Rural		Total	
	Total	Willing to adopt FP	Total	Willing to adopt FP	Total	Willing to adopt FP
"Not responsible"	24	17 (70.8)	95	73 (76.8)	119	90 (75.6)
"Moderately responsible"	20	20 (100.0)	52	35 (67.3)	72	55 (76.4)
"Responsible"	14	14 (100.0)	4	3 (75.0)	18	17 (94.4)
Total	58	51 (87.8)	151	111 (73.5)	209	162 (77.5)

In order to make family welfare services more effective, the following suggestions have been made:

1. An indepth analysis may be made to identify and analyse the causes for poor performance of MCH with a view to instituting remedial services.
2. All types of mass media should be utilised to reach every nook and corner of all the villages to create an awareness of the family welfare programmes and to adopt family welfare measures, including MCH services.
3. Appointments of medical, paramedical and other family welfare personnel should be on the basis of their sense of dedication to the programme and to the wellbeing of the people. They must be responsible for implementing MCH services more effectively.
4. Continuous and close contacts should be promoted among researchers, programme planners and implementers to identify constraints in the way of effectively implementing the programme and achieving the desired results.

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# **ESTIMATION OF DECLINE IN THE INFANT MORTALITY RATE IN INDIA DUE TO FERTILITY REDUCTION**

**MR. HEMANT TIWARI\***

## **Introduction**

In recent years, a number of studies<sup>1-4</sup> have focussed on the trends and differentials in infant and child mortality in developing countries. These studies have stressed the importance of a general improvement in socio-economic development and imported advances in public health technology which have led to the reduction of infant and child mortality levels, with a subsequent effect on fertility.

Infant and child mortality are considered to be sensitive indicators of socio-economic and health conditions prevailing in a community and are closely associated with national socio-economic indicators. Child/infant mortality often reflects differences in parental knowledge and skills as well as family resources<sup>3,5</sup>. While cultural norms governing sex preference in treatment have been found to be associated with child mortality differentials<sup>6</sup>, other factors responsible for infant/child mortality include differences in access to health care after birth and in the age and parity of the mother<sup>7,8</sup>.

The factors responsible for high infant mortality may be endogenous or exogenous. Factors such as age and parity of the mother, and birth order are considered endogenous, and are mainly responsible for higher foetal and neo-natal deaths. Social, economic, cultural and environmental factors are exogenous and are largely responsible for high post neo-natal deaths. Therefore, an improvement in the health and related fields would reduce deaths due to exogenous factors, but not those caused by endogenous factors which are biological in nature.

This paper attempts to assess the amount of reduction in infant mortality levels in India, if births of higher order and those occurring to older and very young mothers are reduced. This would not only help reduce fertility but would also result in a reduction of infant and child mortality levels. Available data, however, do not permit an assessment of the quantitative impact on child mortality, which however, can be inferred from the gain in survival of infants.

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### Maternal Age and Child Mortality

The health of the infant is affected by the mother's age at the time of birth. The very high rate of infant deaths among women below 20 years of age is due to biological immaturity as well as their inability to care for their children due to economic instability, or lack of experience of motherhood. Infant mortality is also high among children born to women over age 35, resulting from biological complications that may occur during older ages. These women are usually of high parity, and repeated births have weakened them and made them anaemic. Consequently, their babies have lower birth weights and are more likely to succumb to infections and illnesses. If childbearing is confined to the optimal ages of 20-34, then not only maternal mortality but infant mortality as well can be reduced to the minimum possible levels without any extra expenditure.

TABLE 1

Infant Mortality Rate by maternal age in some states

Maternal age (in years)	Uttar Pradesh 1980-82	Rural Rajasthan 1976-79	Orissa 1977-81
<19	285	154	198
20-29	199	122	110
30-39	174	142	134
40-49	—	220*	200*

\* Small sample size

Source: 1. Rutstein, S.O. WFS Comparative Studies, Vol. 24, 1983.

2. Visaria, P. and Jain, A.K. (ed.) "Infant Mortality in India: Differentials and Determinants", Sage Publishers, New Delhi (1988).

From the above table it can be seen that the mortality rate of infants (IMR) born to mothers below age 20 and above age 40 are very high. IMR is very much affected by education of the mother. According to Caldwell<sup>3</sup> female education has played a major role in the decline of infant and child mortality in developing societies. Mothers who are educated generally have a higher age at marriage, are apparently less influenced by traditional practices inimical to health care, are more capable of dealing with modern institutions and are able to alter the traditional balance to favour children rather than adults.

### Family Size and Infant Mortality

Pregnant women are more susceptible than other women to iron and vitamin deficiencies and to inadequate nutrition because of the increased demands of pregnancy. Pregnancy superimposes the need for considerable extra-caloric requirement and the younger the mother, the higher this will

be. Thus, teenage pregnancy and motherhood brings further strain on the girl, who is still maturing and therefore is not capable of withstanding the nutritional and metabolic stresses of these events, thereby affecting infant survival to a great extent.

The number of children a woman has already had affects the chances of having a successful pregnancy. Foetal deaths increase with birth order and have been found to increase after the second and third pregnancies.<sup>9</sup> Though improved living conditions and medical care greatly reduce the level of infant deaths, the effect of birth order remains significant. A special survey on infant and child mortality carried out by the Registrar General in 1979<sup>10</sup> shows that infant mortality declines after the first parity and then rises among higher order parities. The graph between birth order and IMR follows a 'U' shape.

TABLE 2

## Infant Mortality Rate by birth order

Order of Birth	U.P. 1981-83	Madurai 1980-81	Rajasthan 1976-79	Orissa 1977-81
1	237	101	134	176
2	241	117	117	118
3	208	63	136	112
4	200	76	138	102
5	196	100	146*	131*
6	216	150	—	—

\* For fifth and higher order births

Source: I. Visaria, P. and Jain, A.K. (ed.) "Infant Mortality in India: Differentials and Determinants", Sage Publishers, New Delhi (1988).

Table 2 indicates that the IMR is very high for first order births. The main reason for this is teenage pregnancies, because in India the average age at marriage is very low. The IMR decreases after first order births in general and again increases at higher birth orders due to many reasons, such as the uterus becoming weak due to repeated pregnancy, or the mother becoming anaemic and giving birth to infants of low birth weight. These factors are more prominent in developing countries.

**Birth Spacing and Infant Mortality**

A longer birth interval is advantageous to the well being of the child. A longer birth interval allows the mother more time to devote to child care. It also gives her more time to regain her strength and health before the next birth. Time is also available for caring for the subsequent child since the earlier-born becomes independent in respect of breast-feeding.

TABLE 3

## Infant Mortality Rate and birth interval

	Length of birth interval(months)		
	≤24 months	24-27 months	45+ months
Punjab (1971)	202	133	108
Gandhigram (1971-75)			
Muslims	106	86	79
Hindu	163	80	53
Pakistan	183.4	103.2	70.8
Bangladesh	184.9	89.0	58.2

Source: 1. WFS Country report of Pakistan & Bangladesh  
 2. Pathak, K. B. (mimeographed at IIPS)

Table 3 shows the negative association between the IMR and length of birth interval. The best birth interval is two or more years. In the case of India, the birth interval is usually more than two years due to the wide practice of prolonged breast-feeding. However, the IMR is high due to maternal malnutrition, poor health and repeated pregnancies.

#### Reduction in IMR due to Reduction in Fertility

In India, the infant mortality rate is as high as 104 per thousand live births. This induces parents to have more children so that at least some of them survive and provide economic and moral support to them in their old age.<sup>3,11</sup>

There is enough evidence to show that the acceptance of family planning and more so, sterilisation, is greater among couples with four or more children perhaps because every couple wishes to achieve a certain family size with an assurance of its existence, and with a bias for at least two sons.<sup>12</sup>

A survey conducted by Bongaarts<sup>2</sup> shows that changes in family building patterns are not likely to have a significant favourable effect on the IMR. Countries with relatively high levels of contraceptive use have fewer teenage births as well as fewer births of order six or over as compared with countries in which contraceptive use is low. These differentials by themselves result in lower infant mortality. However, the fact that countries with higher levels of contraceptive prevalence tend to have a higher proportion of births of order one, and a higher proportion of births with short birth intervals (less than two years), nullifies the above effect. The effect of reduction in fertility on infant mortality therefore, would be greater in developing countries than in developed countries.

TABLE 4

Distribution of births and deaths by order of birth

Order of birth	1	2	3	4	5	6 & above
Percentage of births 1978, rural	23.45	20.63	17.49	13.38	9.69	15.36
Births per 1000 population	8.14	7.16	6.07	4.64	3.36	5.33
Infant deaths* (per 1000 live births)	185	72	70	78	128	167

\* Assumed IMR according to the order of birth

Source: 1. Registrar General India (1981), Survey on Levels, Trends and Differentials in Fertility, 1979, Registrar General's Office, Ministry of Home Affairs, New Delhi.

2. Registrar General India (1981): Survey on Infant and Child Mortality, 1979, Registrar General's Office, Ministry of Home Affairs, New Delhi.

3. Ministry of Health and Family Welfare Year Book, 1985-86.

In Table 4, row 1 shows the percentage of births in 1978 distributed according to birth order. Taking the birth rate of 1978 as 34.7, the births have been distributed using the percentage of births in a given birth order corresponding to births per thousand population as given in row 2. In row 3, infant deaths per thousand live births are provided. If fifth and higher order births are avoided, then the total births will be modified as shown in Table 5. Similarly, infant deaths will also be modified as given in row 2 of Table 5.

TABLE 5

Levels of infant mortality and birth rate if fifth and higher order births are avoided

Birth order	1	2	3	4	Total
Total births	31.29	27.53	23.34	17.85	100
Infant deaths (per hundred live births)	5.79	1.98	1.87	1.39	11.03

It is clear that if the couple chooses to stop after the fourth live birth, infant mortality may be reduced by 19.47 per cent. An even greater reduction in infant mortality is expected because after termination of reproduction, couples would be extra careful about the health of their existing children. They will be able to provide more facilities and greater care to their children, as the family size will be small and they can use their limited resources in a better way. Even health facilities such as those of immunisation and other health services would improve (because the child population would eventually become smaller). Though there is no direct method to measure the extent of reduction in the IMR due to the extra care taken by parents, it would be realised in due course of time.<sup>11</sup>

TABLE 6

**Percentage reduction in IMR if births to females below age 20 and above age 35 are avoided**

	Age of mother (years)			
	20	20-29	30-39	40-49
Percentage of births, 1982	13.82	59.76	22.73	3.69
Births per 1000 each age group	4.62	19.96	7.59	1.23
Infant death per 1000 live births	169.9	94.2	124.9	145.5

Source: 1. IIPS (1985) : Report of a Baseline Survey on Fertility, Mortality and Related Factors in Orissa, 1985, International Institute for Population Sciences, Bombay.

2 Ministry of Health & Family Welfare Year Book, 1985-86

Table 6 depicts the percentage of births in different age groups of mothers and infant deaths in each age group. If these births are restricted to females of ages 20-24 that is, no births occur to mothers under the age of 20 and above 40, then the total births and infant deaths will be modified as presented in Table 7 below.

TABLE 7

**Level of infant mortality and birth rate if births below age 20 and above 35 are reduced**

	Age of mother (years)		
	20-29	30-39	Total
Total births	72.45	27.55	100
Infant deaths (per 100 live births)	6.92	3.44	10.26

Infant deaths per thousand live births in 1982 =  $10.26 \times 10 = 102.6$ .

Infant deaths per thousand live births in 1982 for Orissa = 131 Percentage of reduction = 21.68%.

Thus, the percentage of reduction in IMR if births below age 20 and above age 40 are avoided is 21.68 per cent.

## Conclusion

The infant mortality rate is a very sensitive indicator of the socio-economic condition of a community. Infant deaths can be classified as being exogenous or endogenous. Exogenous causes include social, cultural and economic and environmental factors which affect infant mortality socially during the post neo-natal period. Endogenous factors are related to the formation of the foetus in the womb and are mainly biological in nature. Improvements in health and related fields will reduce deaths due to exogenous factors, but not those due to endogenous factors.

This study reveals that infant mortality rates are higher at younger ages of the mothers (below the age of 19 years), at first parity, and for first order births. The mortality rate declines up to the age 29 of the mother and at second and third parities, and then increases with higher age of the mother, higher parity and higher birth order. The graph of infant mortality rate with respect to maternal age at the time of birth and order of birth resembles a 'U' shaped curve.

The timing at birth of the infant is also an important factor affecting IMR. If the interval between two successive births is less than two years, the chances of survival of the infant are lower than that of an infant born after a higher birth interval.

A reduction in fertility can have substantial impact on infant mortality. In rural India, the analysis shows that if couples choose to restrict births after the third live birth, infant mortality may be reduced by 19.47 per cent. Similarly, if births to mothers below age 20 and above 40 are avoided, the reduction in IMR was observed to be 21.68 per cent in Orissa. Further, after limiting births, parents would be extra careful about their children's health in relation to environmental factors. Thus, the decline in the infant mortality rate would be even greater.

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# **MODERNISATION AND FERTILITY IN AN URBAN COMMUNITY**

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**and**

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## **Introduction**

Modernisation is a complex phenomenon with multiple dimensions applicable to individuals, groups or societies and nations. Most modernised societies around the world have lower fertility as compared to those which are less modernised and more traditional in nature, though Nag<sup>1</sup> speculates that social modernisation may also create conditions which tend to increase fertility. Although much work has been done in this area using societal level variables such as literacy or education, urbanisation, number of radio and television sets, newspaper circulation etc., not much attention has been paid to aspects of individual modernity and fertility. A few scholars<sup>2-10</sup> have established a negative relationship between individual modernity and fertility, both in India and in other countries.

Individual modernity is difficult to define because it has numerous facets and is therefore defined in a number of ways. According to Inkeles<sup>11</sup>, keles<sup>11</sup>, modernisation is a "complex but coherent set of psychic dispositions manifested in general qualities such as sense of subjective efficacy, orientation toward time, readiness for new experience and change, and interest in planning". Goldschneider<sup>12</sup> states that modernisation encompasses two broad dimensions -- development of social structure and development of institutional structure. The latter comprises of changes in a set of values, attitudes and goals, and personal, cultural and general ways of thinking and acting. Both these definitions have been considered in the present study.

The measurement of individual modernity is also a difficult task. Researchers<sup>2-10-13-14</sup> have used a variety of indices to measure individual modernity. These include the level of education, exposure to mass media, urban residence, type of occupation, ownership of modern household articles, degree of adherence to religious or cultural practices, subjective efficacy, orientation toward time, openness to change, readiness for new experience and tendency for general planning in life. However, the present study only

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examines the possession of modern household articles, openness to change and planning for different aspects of life in relation to fertility.

### **Sample and Methodology**

Data for the present study were collected from 325 female respondents residing in Ondipudur area of Coimbatore city, Tamil Nadu. The respondents were selected by a two-stage sampling technique — two wards were selected out of the five wards of Ondipudur area by simple random sampling, and one respondent from every third household in these wards was selected by systematic sampling. The respondents were currently married women, not exceeding 44 years of age and having at least one or more living children at the time of survey.

The modernity level of the respondents was measured on the basis of modern articles possessed by them, their views regarding the timing of their daughter's marriage, asking her opinion about her marriage, the priority accorded to her marriage as opposed to education if she is intelligent, and allowing her to work outside the district/state. The respondents' tendency to plan ahead as related to saving money for the future and for the daughter's marriage, as well as in relation to planning family size was also solicited. An overall modernity index of the respondents was also prepared by giving a higher score for those who held a modern opinion for all the above aspects and a lower score for those who had traditional opinions. The fertility level of each respondent was related to her modernity value orientation individually, and with the overall modernity index.

### **Results and Discussion**

In the present study, the urban respondents had, on average, 2.46 live births at the time of survey. However, those who had been married for 11 or more years, had a significantly ( $z = 13.45$ ;  $P < 0.001$  level) higher mean number of live births (3.19) as compared to those who had been married for ten years or less (1.64). Therefore, the relationship between modernisation and fertility was analysed by controlling the respondents' duration of married life.

#### ***Possession of Modern Household Articles***

The possession of certain modern household articles has been considered as the best indicator for measuring the extent of individual modernity. Of course, one may argue that the possession of modern articles would depend upon the purchasing power or income level of the respondent. But the capacity to buy modern goods does not automatically motivate people to purchase modern household articles if they lack innovativeness. According to In-



keles," the concept of modernisation includes "the readiness for new experiences and the willingness to accept scientific innovations and change".

The results presented in Table 1 clearly indicate a significant negative association between possession of modern household articles and fertility. Respondents who owned more modern articles had significantly lower fertility (1.91) as compared to those who possessed less modern articles (2.47) and those who did not possess any listed modern household articles (3.10).

TABLE 1

Mean number of live births by possession of modern household articles and duration of marriage

Possession of modern household articles	Mean number of live births for marriage duration of		
	<10 years	11 + years	Total
Not possessing modern articles	.90* (20)	3.60* (48)	3.10* (68)
Possessing less modern articles +	1.60 (83)	3.25 (92)	2.47 (175)
Possessing more modern articles + +	.60* (50)	2.40* (32)	1.91* (82)
$z^* =$	1.30	4.84	5.85
$P =$	N.S.	<0.001	<0.001
Total	1.64 (153)	3.19 (172)	2.46 (325)

+ Radio, cycle, wrist watch, kerosene stove.

+ + The above less modern articles, plus two-in-ones, gas stove, mixer grinder, table clock/wall clock, furniture (table/chairs)

An almost similar trend was observed among women who had a marital duration of 11 or more years; the relationship was not significant among respondents who had enjoyed a lesser duration of married life.

### Openness to Change

Historically, Indian people are more traditional in following age-old customs, norms and values. Nevertheless, social change has resulted in changes at the individual level and some people, at least those residing in urban areas, have adopted modern values. The results suggest that on the whole, all the four selected measures of openness to change, namely age at marriage of daughters, asking the daughter's opinion about her marriage, priority for higher education of daughters as opposed to marriage, and permitting daughters to work outside the district/state exerted a significant

negative influence on fertility (Table 2)

TABLE 2

Mean number of live births by measures of openness to change and duration of marriage

Measures of openness to change	Mean number of live births for marriage duration of		
	<10 years	11 +	Total
<i>Timing of daughter's marriage</i>			
Immediately after puberty	1.81 (43)	3.67 (97)	3.10 (140)
After completing some education	1.57 (110)	2.58 (75)	1.98 (185)
Z =	1.714	5.74	8.57
P =	N.S.	<0.001	<0.001
<i>Asking daughter's opinion for marriage</i>			
Will not ask	1.87 (11)	3.35 (40)	3.03 (51)
Will ask	1.62 (142)	3.14 (132)	2.35 (274)
Z =	1.22	1.80	3.22
P =	N.S.	N.S.	<0.01
<i>Priority for daughter's marriage education</i>			
Will arrange marriage	1.86 (46)	3.64 (96)	3.07 (142)
Will provide higher education	1.54 (107)	2.63 (76)	1.99 (183)
Z =	2.31	5.49	7.50
P =	<0.05	<0.001	<0.001
<i>Allowing daughter to work outside the district/state</i>			
Will not allow	1.73 (49)	3.65 (84)	2.96 (133)
Will allow	1.59 (104)	2.76 (88)	2.12 (192)
Z =	1.03	5.00	5.34
P =	N.S.	<0.001	<0.001

Thus, respondents who exhibited openness to change had significantly lower fertility—1.98, 2.35, 1.99, and 2.12 for the four respective issues ex-

amined, than those who did not favour the change (3.10, 3.03, 3.07 and 2.95 respectively). However, when a similar analysis was carried out by controlling for duration of marriage, though the observed trend was noticed uniformly, it was more conspicuous (the 'z' values were significant for three of the four measures of openness to change) among those who had been married for 10 or fewer years (only one 't' value was significant).

### *Planning for Different Aspects of Family Life*

The tendency to plan for different aspects of family life is a characteristic of modernisation. It was generally noticed that those who planned various family life issues also showed a tendency to plan family size and thereby to reduce their fertility levels<sup>14</sup>. Therefore, it may be hypothesised that those who plan for the kind and quality of family life they desire, are likely to plan their fertility also. In the present study, planning by the individual was examined in relation to three major aspects of life namely, saving money for the future, advance planning for the daughter's marriage, and planning family size

Table 3 indicates that respondents who planned all these three aspects of family life had a significantly (at .001 level) lower mean number of live births (2.12, 2.03 and 1.84 respectively) as against those who did not plan for them (3.02, 3.15 and 3.00 respectively). Further, this trend was more conspicuous among respondents who had experienced 11 or more years of married life as compared to those with a shorter marriage duration.

### *Overall Modernisation Index*

As mentioned earlier, an overall modernisation index was also constructed to measure the overall modernity level of the respondents. Based on these modernisation index scores, the respondents were categorised as traditional, moderately modern and modern, and then cross-tabulated using their fertility levels.

The results clearly indicate that the mean number of live births was significantly (at .001 level) low (1.93) among respondents categorised as 'modern', whereas it was slightly higher (2.60) among 'moderately modern' respondents, and highest (2.90) among those who were categorised as 'traditional'. A more or less similar significant relationship was also observed among respondents who had spent 11 or more years of effective married life.

It is well known that the education of women is an extremely important indicator which moves along with modernisation. Therefore, an attempt was made to analyse differentials in fertility levels by modernisation, by controlling the educational level of the respondents. The overall findings as presented in Table 4 suggest that irrespective of the level of modernisation the mean

TABLE 3

Mean number of live births by planning for different family life aspects and duration of marriage

Planning for different aspects of family life	Mean number of live births for marriage duration of		
	<10 years	11 + years	Total
<i>Saving money</i>			
Not saving	1.75 (45)	3.76 (78)	3.02 (123)
Saving	1.59 (108)	2.72 (94)	2.12 (202)
Z =	1.68	7.07	5.68
P =	N.S.	<0.001	<0.001
<i>Daughter's marriage</i>			
No planning	1.77* (31)	3.83* (63)	3.15* (94)
Planning since her adolescence	1.70 (39)	2.97 (51)	2.42 (90)
Planning since her childhood	1.57* (83)	2.70* (58)	2.03* (141)
Z =	1.20	5.41	5.53
P =	N.S.	<0.001	<0.001
<i>Family size</i>			
Not planned	1.81 (61)	3.64 (113)	3.00 (174)
Planned	1.53 (92)	2.33 (59)	1.84 (151)
Z =	2.61	8.26	6.30
P =	<0.01	<0.001	<0.001

number of live births was significantly lower among respondents with low educational levels or no education.

However, it is likely that respondents who were classified as 'traditional' were older on average than others. Therefore, when controlled for duration of married life, the education—fertility, and modernisation—fertility relationships for respondents with ten or fewer years of marital duration, were unclear. However, for women with higher marital durations, the effects of both education and modernisation were clearly observed in the expected direction. This indicates that both higher levels of education and modernisation are associated with low fertility after the initial childbearing period. Therefore, it appears that fertility control appears to be directed more towards limiting the size of the family rather than spacing it.

TABLE 4

Mean number of live births by overall modernisation index, educational status and duration of marriage

	Marital duration < 10 years			Marital duration 11 + years			Total		
	Low	High	Total	Low	High	Total	Low	High	Total
Traditional	1.72 (17)	1.75* (25)	1.74* (42)	3.81* (53)	2.94* (15)	3.62* (68)	3.30* (70)	2.20* (40)	2.90* (110)
Moderately modern	2.26 (6)	1.54 (928)	1.67 (34)	3.40 (36)	2.70 (30)	3.08 (66)	3.24 (42)	2.14 (58)	2.60 (100)
Modern	1.50* (14)	1.60* (63)	1.58* (77)	3.15* (11)	2.42* (27)	2.63* (38)	2.23* (25)	1.85* (90)	1.93* (115)
Total	1.72 (37)	1.62 (116)	1.64 (153)	3.59 (100)	2.64 (72)	3.19 (172)	3.08 (137)	2.01 (188)	2.46 (325)
Z-test results	522	1.104	1.170	1.790	1.785	4.106	5.617	1.219	5.24
Level of Significance	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
<i>Between education levels</i>									
Traditional	N.S.			Z = 2.479; P < 0.05			Z = 3.688; P < 0.001		
Moderately modern	Z = 1.987; P < 0.05			Z = 3.100; P < 0.01			Z = 6.250; P < 0.001		
Modern	N.S.			Z = 2.364; P < 0.05			Z = 2.030; P < 0.05		

Educational Status : Low = Illiterate and up to primary school level.

High = Middle school or higher level of education.

## Conclusions and Implications

The results of this study indicate that individual modernity value orientations are negatively associated with the fertility behaviour of urban women. But this type of inverse relationship between modernisation aspects and fertility is not so clearly observed among women who have experienced a relatively shorter (10 or fewer years) duration of married life. The primary reason for this may be the fact that these women are still in the early phase of childbearing and thus might have not completed or achieved their family size. However, for those women with longer marital durations, the differentials in fertility by modernisation and education can be seen very clearly and in the expected direction. Therefore, there is an urgent need to cultivate modern values among women of reproductive ages through adult education programmes, exposure to mass media and involvement of voluntary organisations.

In addition, the general level of education of women has to be increased so as to achieve the lower fertility.

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# **NEHRU'S VISION OF WOMEN, DEVELOPMENT AND FAMILY PLANNING\***

**Air Vice Marshal (Retd.) E.S. LALA†**

## **Introduction**

To write of Mahatma Gandhi and Pandit Jawaharlal Nehru is like going on a pilgrimage. One is seized with a terrible sense of inadequacy when one attempts to write of anything on these two great men. Let me commence my sojourn on "Nehru's vision of women, development and family planning" by quoting a few lines from his speech entitled "Tryst with Destiny" delivered by him on the midnight of 14th August 1947. He refers to the future of India and he says:

"...that future is not one of ease, or resting, but of incessant striving, so that we may fulfil the pledges we have so often taken and the one we shall take today. The service of India means the service of the millions who suffer. It means the ending of poverty and ignorance, and disease, and inequality of opportunity. The ambition of the greatest man of our generation has been to wipe every eye. That may be beyond us, but as long as there are tears and suffering, so long our work will not be over. And so we have to labour and to work, and work hard, to give reality to our dreams."

As India's first Prime Minister, Jawaharlal Nehru guided the destiny of the nation for 17 long years with devotion, courage, and an unswerving faith in the dignity and worth of the individual and the democratic way of life. To a world torn by the hates and fears born of conflicting ideologies, he brought the message of peaceful coexistence and tolerance, and played a vital role in easing cold-war tensions. His firm belief in and adherence to the policy of non-alignment won for his country a voice in international politics.

As the architect of modern India, he exercised an all pervasive influence in the national sphere and there was hardly any branch of activity where he did not contribute significantly and beneficently. The vast Five Year Plans, the special attention paid to scientific development, the infusion of a modern spirit in the revival of ancient arts and culture—in all these, Jawaharlal Nehru made a key contribution.

† Secretary General, Family Planning Association of India, Bajar Bhavan, Nariman Point, Bombay 400 021.

\* Oration delivered at the seminar on "Women's Development and Family Planning" organised by the Family Planning Association of India in Srinagar, 29th August–31st September, 1989.

The late Prime Minister was keenly aware of the urgent need for limiting population growth in the national interest. As far back as 1935, under his Chairmanship, the National Planning Committee set up by the Indian National Congress recommended that "in the interest of social economy, family happiness and national planning, family planning and a limited number of children are essential and the State should establish a policy to encourage this. It is desirable to stress the need and to spread knowledge about cheap and safe methods of birth control."

Old stalwarts in the field of family planning will recall Jawaharlal Nehru's words at the Sixth International Conference on Planned Parenthood in 1959, in New Delhi, when he spoke of "the intimate connection of family planning with general economic and educational advance." He stated on this occasion: "It is a matter of some gratification to me, that perhaps the Government of India, is the only government which has officially, as a government, taken this matter up, in our country. I know that many other governments deal with it and have done much more work perhaps; but for some reason or other, they have not officially adopted it. Of course, the fact that the Government of India has officially adopted this, does not mean that the hundreds of millions of the people of India have done so; but it does mean that our approach to this question is not (if I may use the word) a 'purdah approach', an approach of a kind of behind-the-veil and not stating what we are after quite clearly and definitely, but rather indirectly. That is so, at the same time we realise completely the tremendous difficulties of the problem."

In his message wishing success to the Fifth All India Conference on Family Planning, Shri Jawaharlal Nehru wrote to Smt. Avabai B. Wadia, President of the Family Planning Association of India: "You are quite right in thinking that I am greatly interested in family planning and I wish it all success. . . I send you all my good wishes for the conference."

### **Nehru's Views on Women**

Let me quote from a speech made in New Delhi in the Lok Sabha on the "Hindu Marriage Bill" on 5th May 1955, regarding the role of women.

"I can say with considerable confidence that I am proud of the women of India. I am proud of their beauty, grace, charm, shyness, modesty, intelligence, and their spirit of sacrifice, and I think if anybody can truly represent the spirit of India, the women can do it and not the men. Every time that a woman has been sent abroad, she has done well; not only done well, but produced a fine impression about the womanhood of India.

"I have the greatest admiration—I am not talking about the ancient Indian ideal of womanhood, which I certainly admire—for the women of India today. I have faith in them. I am not afraid to allow them freedom to grow, because I am convinced that no amount of legal constraint can prevent society

from going in a certain direction. And if you put too much restraint, the structure breaks."

In Jawaharlal Nehru's famous book "Discovery of India" I would like to quote him on women and national struggle: Most of us menfolk were in prison. And then a remarkable thing happened. Our women came to the front and took charge of the struggle. Women had always been there of course, but now there was an avalanche of them, which took not only the British Government but their own menfolk by surprise. Here were these women, women of the upper or middle classes, leading sheltered lives in their homes, peasant women, working-class women, rich women, poor women, pouring out in their tens of thousands in defiance of government order and police lathi. It was not only that display of courage and daring, but what was even more surprising was the organisational power they showed.

"Never can I forget the thrill that came to us in Naini Prison when news of this reached us, the enormous pride in the women of India that filled us. We would hardly talk about all this among ourselves for, our hearts were full and our eyes were dim with tears."

In a review of Katherine Mayo's "Slaves of the God" Nehru writes on women's contribution to socio-economic development and I quote:

"Social reform legislation is good and to be worked for and welcomed. But all the good legislation in the world will not make a man or woman a free agent so long as he or she is economically under another's bondage. It is the economic bondage that is the root cause of the troubles of the Indian woman and to the removal of this our energies must be directed. The joint family system of the Hindus, a relic of a feudal age, utterly out of keeping with modern conditions, must go and so also many other customs and traditions. But the ultimate solution lies only in a complete refashioning of our society."

In Nehru's speech at the Foundation of a Women's College, in Madras on 22nd January 1955, Nehru said:

"Truly no argument is required in defence of women's education. For my part, I have always been strongly of the opinion that while it may be possible to neglect men's education it is not possible or desirable to neglect women's education. The reasons are obvious. If you educate the women, probably men will also be affected thereby, and in any event children will be affected. For every educationist knows that the formative years of a person's life are the first seven or eight years. We talk about schools, and colleges which are no doubt important, but a person is more or less made in the first ten years of his or her life. Obviously, in that period, it is the mother who counts most of all. Therefore the mother who has been well trained in various ways becomes essential to education. Most mothers, trained otherwise, I regret to say, are not good mothers.



**“The idea that women should be kept away from most occupations no longer finds favour. It might be that certain occupations are not suited for women but that is a different matter. There are plenty of occupations which they could engage in and which they do engage in. If we analyse the matter carefully, we shall find that the average woman in India works in the field. In fact both man and woman work in the field. It is only when one gets to the middle class that the question of distinction arises. The great majority of our women have to work because economic circumstances compel them to work. Unfortunately, the idea has been prevailing—I am glad to see that it is rapidly fading—that the less work one does the higher is one’s status in society.**

**“Whatever group or religion one might belong to, education is essential. By education I mean education and not merely learning to be lady-like. Learning to be lady-like may be good in itself but is not education as such.**

**“Education has mainly two aspects, the cultural aspect which makes a person grow, and the productive aspect which makes a person do things. Both are essential. Everybody should be a producer as well as good citizen and not a sponge on another person even though the other person may be one’s own husband or wife. That is the way we are developing and persons who do not wake up to this fact and prepare themselves for it will just be left behind. So it is highly necessary that we should develop our education, among our girls more especially, because men are provided for to some extent. There are still inhibitions in the case of Muslim girls’ education and these should be removed, because apart from any other big reason, common-sense tells us so.”**

**In a message to the Conference of All India Women’s Conference on 29th October 1945, Nehru wrote on the women’s role in community development which I quote:**

**“I have long been of opinion that a nation’s progress depends on the position of women there. The fall of India from her high status was partly at least done due to the deterioration of the status and position of women in India. In a subject country men and women both suffer the indignity of subjection to foreign rule and the numerous disabilities that flow from it. So the first and primary duty of every one is to do his or her utmost to free the country. Indeed it is in performance of the duty that a person or a group get rid of also in some measure of other disabilities. We have seen during the past quarter of a century how the participation of women in the great national struggle in India has in effect raised their status in many ways and opened out opportunities to them.**

**“Now we are on the verge of great changes but before these take place great efforts and sacrifices will be needed. In these I hope women will take a leading part and thus fit themselves for the responsibilities ahead. They**

will have the future task of getting rid of the many disabilities, legal, social and other, which today attach to their sex, so that they may play an equal part with their menfolk in the building up of a free India."

### **Nehru's Views on Family Planning**

"Whatever individual views may be on this question, it seems to me clear that we should give it the fullest consideration from all points of view. The approach should be scientific and the aim social good. Any scientific approach must not be inhibited by preconceptions or convictions already held. We must approach the question with a completely open mind and examine every aspect of it. Any question that involves the intimate lives of human beings produces psychological and other reactions which must necessarily be kept in view.

".....I have found that city folk, even when they try hard, cannot easily adjust themselves in thinking, to village conditions and unless you do that, you will not go very far in affecting or influencing the village ..... I address large rural audiences from time to time and almost always I speak of family planning to them—more to find out their reactions because, addressing fifty thousand or hundred thousand people, one can only touch the broad aspects of problems—but it is interesting to watch their reactions,

"...As we plan for progress here, we constantly come up against the population factor ..... When the very first thing that we have considered is ... .. what will be the population for which we are planning, how much food will they require, how much clothing, how much housing, how much of so many other things—education and health, immediately we come up against the physical objectives which we have to attain and their relation to the population of India; and so, we have to say, well, by the end of the third Plan that is, say, seven years from now, that will be the estimated population and we have to plan for that. We have to come to grips with this figure, it doesn't become merely some kind of a theoretical concept, but the actual figure for which we have to plan in terms of food, clothing, housing, education, health, work etc., and then we realise even more than otherwise, what we are up against if our population goes up rapidly, and the necessity for some kind of limitation of that growing population becomes an urgent matter for us."

### **On Development**

A multi-pronged programme aimed at all round development was visualised by Nehru and formulated for implementation immediately. He said, "there was no time to be lost. Even if the nation wanted to be where it was it had to run fast." He sincerely believed in "progress by consent", in spite of the fact that adherence to this policy considerably slowed down the progress.

He said: "democracy has many virtues, but one of its concomitants is wastage of time and energy". He said that "country's progress depended on the rate of investments and it would not be possible to raise the rate of national savings in India, unless, somehow the increase in population stopped". He emphasised that whatever the obstacles, India had to hasten the rate of progress otherwise all economic gains would be eaten up by the increase in population and there would be no rise in the standard of living of the people.

In his introductory remarks, the Prime Minister said that perspective planning for the next 15 to 20 years was essential to ensure that the country moved towards the desired objectives. But at the same time, a process of annual planning, even within the Five-Year period, is to be adopted to ensure flexibility in view of the uncertainties of time and changing circumstances.

Mr. Nehru said that all problems—political, economic or social, drove one to the conclusion that the question of family planning should be taken up and pressed forward with vigour and intelligence. The growth of population, he added was one of the many things which came in the way of standards being raised in the country.

Mr. Nehru referred to the difficulties in getting into the mind of the average peasant or worker, ideas of social reform and said: "In all our activities, especially, activities relating to influencing mass opinion, we have always to keep in mind that we must speak in language which is understood, is simple, is not complicated, is not ideological, but a language which promotes definite images in the people's minds."

In a speech in Parliament on 15th December 1952 he said: "We have to develop the village and cottage industry in a big way, at the same time making sure that in trying to develop industry, big and small, we do not forget the human factor. We are not merely out to get more money and more production. We ultimately want better human beings."

In a speech at the opening of the Nangal Canal on 8th July 1954 he said: "As I walked round the site I thought that these days the biggest temple and mosque and gurdwara is the place where man works for the good of mankind. Which place can be greater than this ..... where thousands and lakhs of men have worked, have shed their blood and sweat ..... where can be a greater and holier place than this, which we can regard as higher?"

## **Conclusion**

I would like to conclude by finally quoting the Foreword given by Mr. Nehru in Rajkumari Amrit Kaur's book "Challenge to Women" in which he says, and I quote: "For the women of India, for all their charm and intelligence and capacity for good work, have been too long neglected. I believe that India has a great future, but I also believe that real and rapid progress

in India will only come when our womenfolk get really moving and rid themselves of everything that suppresses them and keeps them back. Because I see clear and definite signs of the movement, I am full of hope for India, and because our national movement has been largely instrumental in releasing women from many an old bond, that movement has demonstrated its essential soundness and vitality.''

In a letter to Shantiniketan asking for admission for his daughter Indira he said "I dislike the education which prepares a girl to play a part in the drawing room and nowhere else. Personally, if I had the chance, I would like to have my daughter work in a factory for a year, just as any other worker, as part of her education.''

The best way to end this brief survey of Nehru's vision of building as early as possible a secular, sovereign, enlightened, strong, democratic republic of modern India is to say that Nehru was a visionary. He had several dreams. He had made several promises to us however, and he did achieve several of his dreams during his life time. But there are still many dreams which he could not translate into practice. I would like to quote four lines from Robert Frost's poem which Nehru had read about a fortnight before his passing away and which he had written down on his work table at home. These lines are avocative of Nehru's mind in the late evening of his life. The four lines run like this:

The woods are lovely, dark and deep,  
but I have promises to keep,  
and miles to go before I sleep,  
and miles to go before I sleep.

# **ENHANCING CONTRACEPTIVE ACCEPTANCE THROUGH LOCAL MAHILA MANDALS: ONE EXPERIENCE IN RURAL HARYANA**

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## **Introduction**

A variety of strategies have been recommended in order that India achieves the demographic target of NRR 1 by 2011, meaning thereby that the two child norm is universally accepted through a voluntary family planning programme. These strategies have concentrated both on strengthening programme features, including quality and outreach of services, and more importantly, on the generation of demand among the population for services. The Revised Strategy for the National Family Welfare Programme<sup>1</sup> has outlined a number of avenues which may have direct and indirect effects on fertility. These include such factors as imaginative information, education and communication strategies which hope to improve motivational work at the field level as well as through a variety of media; the involvement of the NGO sector, including community organisations such as popular committees, Mandals and especially Mandals involving women. In fact, the strategy went so far as to recommend the formation of a corps of two million women volunteers who would be instrumental in motivating eligible couples to accept family planning. The purpose of this paper is precisely to document the experience of one successful project which encouraged local voluntary group participation in enhancing contraceptive acceptance, and specifically acceptance of sterilisation in a rural area of Haryana.

## **Background**

The advantage of community participation in family planning motivation is that local volunteers are sensitive to social and cultural conditions and thus have more credibility within the community. In order to limit family size, individuals must acquire not only a knowledge of family planning methods but more important, the motivation to voluntarily implement that knowledge and local motivators have been found to be a successful medium through whom to accomplish this.

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The actual experience of various strategies employing community participation at the grass roots level tends to have been poorly documented. For example, the strategy of forming and strengthening local voluntary group participation in a variety of integrated rural projects operated by the Family Planning Association of India has in fact led to increased contraceptive prevalence, and lower fertility and infant mortality as evident from the successful experiences in Madhya Pradesh<sup>2</sup> and Karnataka.<sup>3</sup> A somewhat different strategy was adopted by the FPAI Haryana Branch, with the intention of enhancing the acceptance of family planning in rural areas, using local volunteers. The focus here was to train Mahila Mandal (women's club) members specifically as family planning motivators to disseminate family planning education and recruit new acceptors.

The important point is that members of Mahila Mandals work voluntarily in rural areas. Since membership is not based on caste or class factors, they represent a cross section of the rural population in terms of literacy and economic levels. By and large, their sense of community participation is high, since they are selected from within the village. Mahila Mandals have no doubt been successful in promoting women's development in rural areas; these Mandals tend to be accepted and respected among rural people.

While traditionally, the scope of activities undertaken has excluded family planning motivation, the FPAI Haryana Branch attempted precisely to bridge this gap—that is, to integrate Mahila Mandals in the overall development programmes of rural areas, by training them to add this dimension into their programmes and activities, in pursuance of the national family planning programme. Its role as a non-governmental and non-family planning organisation was viewed to be of great importance.

In particular, it was recognised that voluntary workers are more effective in motivating people to adopt contraceptive practices and that since a larger proportion of family planning acceptors are women rather than men, women volunteers may be more successful as motivators. What was observed to be lacking was adequate knowledge and training among women to assume this role: hence the FPAI Haryana Branch first concentrated on orientation and training programmes for these women volunteers.

Four blocks namely, Pinjore, Raipur Rani, Ambala and Naraingarh of Ambala district, Haryana, were selected for intensive training of Mahila Mandal members in techniques of family planning motivation and other aspects of information, education and communication. These blocks form part of the area served by the FPAI Haryana Branch, and are situated approximately 70 kms. from its office at Chandigarh. The density of the population in the area according to the 1981 census is 368 per sq.km. The overall literacy rate is 44.6 per cent while the female literacy rate is 32.9 per cent. Scheduled castes comprise 23.5 per cent of the population of these blocks. The decen-

nial growth rate (1971-1981) is 28.3 per cent. Among fertility indicators, the gross reproduction rate in Haryana is 2.4 and the couple protection rate is 52.1 per cent. The birth rate decreased marginally during 39.6 to 36.6 during 1970 to 1984.<sup>4</sup>

### **Data**

Training of Mahila Mandal members was entirely conducted by the FPAI Haryana Branch from October 1985 to March 1986 with the financial support of the state government. A year after the completion of the training programme, an evaluation was conducted in order to 1) determine the level of improvement in contraceptive acceptance in the delegated areas after the training period from October 1985 to March 1986; and 2) assess the extent to which any improvement in family planning acceptance could be attributed to the involvement of Mahila Mandal functionaries—in other words to evaluate the effectiveness of this strategy.

The evaluation study focused on both the service providers, that is, Mahila Mandal trainees, and also the acceptors. The intention was to examine the perspectives of both the motivators and the acceptors. Specifically, the study examined the kind of pre-acceptance motivation, as well as post-acceptance follow up provided by the motivators; more generally the study examines the nature of the interaction between motivators and acceptors. Finally, the study evaluates the perceptions of Mahila Mandal motivators, specifically with regard to their successes, failures and difficulties encountered in generating a local demand for family planning.

### **Training**

#### ***Selection of Mahila Mandal Motivators***

Fifty four village Mahila Mandals from the four blocks were selected for the training. Among these, individuals were randomly selected from among the active functionaries on a lottery basis (the head of each Mahila Mandal provided the names and addresses of two to three functionaries, preferably from among currently married women in the reproductive years, who were themselves contraceptive acceptors, were willing to promote family planning programmes, were influential in their communities and who were willing to undergo the FPAI training programme). A total of 200 members were then selected for training, of whom 157 actually participated in the training programme.

#### ***The Training Programme***

The orientation training programme was conducted by the Haryana Branch of the FPAI with small groups of selected workers separately in each of the

four blocks. Each group of Mahila Mandal motivators attended a three-day workshop in its own area completing the entire training schedule from October 1985 to March 1986. Resource persons for the training programme included the Chief Medical Officer, Ambala, experts from the department of health services, social welfare, public relations, All India Radio, press, local leaders as well as FPAI Haryana Branch volunteers and staff.

The training was geared to orienting the Mahila Mandal motivators in family planning motivational techniques, community participation, women's development and health care, using lectures, discussions, role play techniques, demonstrations and film shows. Direct communication between the trainers and trainees was adopted to facilitate the learning process. Tests were conducted to assess the learning and understanding ability of the participants. The trainees were also actively involved in planning incentive-related FP campaigns.

The content of the training stressed the information, education and communication aspect of family welfare activities, so that the role of these trainees would complement that of local health functionaries. The curriculum then concentrated on providing both general information such as the national policy and family planning programme, human reproduction and contraception, available methods of contraception and their advantages as well as their potential side effects. Care was taken to dispel rumours regarding the adverse health side effects of various methods of family planning. In addition, in the area of communication, motivational techniques were imparted through a variety of sessions including role play and skits. Finally, participants were made aware of such programmes as individual and community incentive schemes for sterilisation acceptance, and income generating schemes for women available through the government. In short, participants were trained to (1) develop contacts with community and other opinion leaders, and neighbourhood committees and panchayats; (2) make regular home visits; (3) conduct information sessions for parents; and (4) involve other voluntary and government agencies.

After the completion of training, the Mahila Mandal motivators were entrusted with the task of motivating and promoting income generating activities in their respective areas. They were also given the responsibility of arranging to distribute contraceptives, referring family planning acceptors to appropriate agencies, undertaking follow up health care, arranging for the receipt of individual and community incentives both for family planning acceptors as well as Mahila Mandal motivators. Special incentives for Mahila Mandal motivators were introduced by the FPAI Haryana Branch. Media coverage, educational and motivational programmes as well as post-sterilisation follow up care programmes were also organised by the Branch with the participation of Mahila Mandal motivators and the state government



during sterilisation campaigns.

As part of this exercise, a large number of incentives generally available from government agencies were mobilised. First, at the level of the individual acceptor, for example, aside from the usual compensation, such additional incentives as monthly scholarships and self employment opportunities and seed money were provided to those who accepted sterilisation, and in particular those accepting sterilisation at low parities (two or fewer children); and with only daughters and no sons, or one son. Second, incentives were also available for motivators themselves, including Rs. 250 for motivating 15 cases and scholarships of Rs. 20 per month for one year for motivating more than fifteen cases. Third, awards were also made to individual Mahila Mandals, ranging from cash awards of Rs. 50 for five cases to Rs. 250 for fifteen cases, to the provision of a sewing machine for skill development programmes to the provision of interest free loans for a variety of income generating and skill development activities. It is of interest to note that all incentives were mobilised through already available government sources or through other voluntary organisations; the FPAI Haryana Branch incurred no expenses in this regard.

#### *Participation in Post-training FP Camps*

A comparison of the numbers of acceptors who adopted sterilisation at family planning camps organised routinely by the FPAI Haryana Branch before and after these training programmes certainly points to the success of this approach. For example, in a total of 12 such camps, three before training commenced (in Panchkula) and nine following the training (four in Panchkula, two each in Raipur Rani and Naraingarh, and one in Ambala), the project reports the recruitment of a total of 943 sterilisation acceptors, including 157 belonging to pre-training camps and 786 to post-training camps. In other words, though the post-training camps comprise three quarters of the camps conducted, these have recruited as many as 84 per cent of all acceptors.

#### **The Sample**

The retrospective study compared 157 Mahila Mandal motivators and 678 acceptors. Mahila Mandal motivators were included with the respondents in order to evaluate the changes brought about in their perceptions and attitudes to family planning acceptance after the training. Of the 157 trained Mahila Mandal motivators, only 143 were available to be interviewed during the survey.

Due to administrative constraints, acceptors were approached only once and only those available during this visit were interviewed. As many as 127 of the 157 acceptors in the pre-training camps and 549 acceptors from the 768 in the post-training camps were interviewed. Of these, 63 were from

places outside the study blocks, 151 were unavailable and 23 refused to divulge the information requested. A total of 676 out of 943 acceptors were then interviewed and the resulting data analysed. Interviews were conducted by four trained investigators during 1987.

The study primarily sought information on the value of training Mahila Mandal motivators and their impact on family planning acceptors and the results of the study highlight the major findings. Two questionnaires were canvassed, one among acceptors, the second among motivators; all interviews were conducted through home visits. Aside from socio-demographic characteristics, each questionnaire had a unique focus. First, from the acceptors was elicited such information as the extent to which their acceptance of sterilisation was in fact motivated by a Mahila Mandal motivator, reasons for undergoing sterilisation, level of satisfaction with the services offered by the FPAI and the Mahila Mandal motivators during and after the family planning camps, and their attitude to the incentives offered to them.

Second, the questionnaire devised for the Mahila Mandal motivators concentrated on the extent of work undertaken to motivate acceptors, difficulties encountered as well as the benefits and satisfactions derived from attending the training course.

### **Profile of Acceptors**

#### *Socio-economic and Demographic Characteristics*

Table 1 presents the socio-economic and demographic characteristics of acceptors of pre- and post-training camps.

A number of features record notable changes. For example, whereas only five per cent of all sterilisations performed at pre-training camps were male, this proportion had increased to 15 per cent in the post-training camps. This suggests that trained women motivators can be an effective vehicle through which to enhance male involvement in the programme. Second, there is evidence that camps held in the post-training period did in fact attract a larger proportion of acceptors of lower socio-economic status. A significantly larger proportion of lower caste, agricultural workers, lower income and illiterate men and women were sterilised in post-training family planning camps compared with the pre-training camps. This clearly indicates that well trained, local motivators can play a significant role in attracting precisely that population which has traditionally been reluctant to accept family planning services.

Demographic indicators—age and parity of acceptors—indicate an increase in the average age and parity of acceptors between the pre- and post-training camps. This may be attributed, on the one hand, to the stress on the less educated and poorer sub-population among the post-training family

TABLE 1

Socio-economic and demographic profile of  
acceptors in pre- and post-training sterilisation camps

	Pre training	Post training
Number	127	549
Sex of acceptor		
Female	95.3	85.1
Male	4.7	14.9*
Caste		
Upper/middle	70.1	55.4*
Lower/backward	29.9	44.6
Occupation		
Agriculture	23.5	71.2*
Labour	13.4	29.7
Service	54.3	32.1
Business	8.7	13.8
Type of household		
% Nuclear	83.5	71.2
Monthly household income		
Rs. 600	8.7	20.2*
Rs 600-1200	63.3	58.7
Rs 1200	26.0	21.1
Parity		
Two or fewer	42.5	26.4*
More than two	57.5	73.5
Age of husband (years)		
15-24	3.1	0.4*
25-34	31.1	21.9
35-44	13.4	21.9
45+	2.4	0.7
Age of wife (years)		
15-24	26.0	7.5*
25-34	66.1	82.7
35-44	7.9	9.8
Literacy husband		
Illiterate	18.9	71.1*
Literate +	81.1	82.9
Literacy wife		
Illiterate	47.2	57.4
Literate +	52.8	42.6

\* Change between pre- and post-training sterilisation camps significant (X<sup>2</sup>)

planning camp acceptors. On the other hand, the training stressed that sterilisation is not an appropriate method for very young and low parity (less than two) women and this factor may also have resulted in the increase in average age and parity of acceptors.

*Attitudes and Perceptions regarding the Role of Mahila Mandal Members*

Table 2 presents acceptors' perceptions of the role played by Mahila Mandal members.

TABLE 2

Attitudes and perceptions of acceptors to Mahila Mandal members who have motivated them

	Pre training	Post training
<b>A Source of motivation</b>		
Mahila Mandal member	10.2	21.3
Others	89.8	80.5
Panchayat	2.4	3.8
FP workers	59.9	45.2
Govt. workers	24.4	23.3
None/family	3.1	6.4
<b>B. Source of information on camps</b>		
Mahila Mandal member	13.4	31.2
Government worker	16.5	17.5
PHC worker	19.7	14.9
Could not identify	50.4	36.4
<b>C Why acceptor preferred to be sterilised at FPAI camp</b>		
Special awards	97.6	98.5
More accessible	96.1	93.3
Quality of services	94.5	99.5
Incentive	66.9	65.9
Contact with FPAI or Mandal worker	58.3	85.4*
Advised by Mandal worker	3.9	18.1*
<b>D % reporting assistance of Mahila Mandal member before or during sterilisation</b>	15.9	45.7*
<b>E % reporting follow-up by Mahila Mandal member</b>	15.0	22.0
<b>F. % who received incentives</b>		
in cash	100.0	100.0
in kind	85.8	100.0
<b>G. % reporting that they would not have accepted sterilisation without the incentive</b>	1.6	10.2*

\* Change between pre- and post-training sterilisation camps significant (X<sup>2</sup>)

Panel A indicates that over one-fifth of all respondents from the post-training camps were reported to have been motivated by a Mahila Mandal member, as against 10 per cent in the pre-training camps. Similarly, Panel B reports that while only 13.4 per cent of acceptors were aware of FPAI camps in the pre-training period. This increased to as many as one-third of the acceptors in the post-training period. This increase resulted from the fact that Mahila Mandal members had undertaken the responsibility of informing people about upcoming FPAI camps, their locations and the incentives offered.

Panel C of Table 2 reports reasons for accepting sterilisation in the camps organised by FPAI. Such reasons as special awards, accessibility of camps and better quality of services were reported almost universally by respondents from both the pre- and post-training camps. What has changed dramatically however is that in the post-training period, as many as 85 per cent of acceptors were affected by the information and assurances given by FPAI or Mahila Mandal members, compared with 58 per cent in pre-training camps. And as many as 18 per cent of acceptors in the post-training camps (compared with 3 per cent in pre-training camps) accepted the advice of Mahila Mandal members in their decision on where to be sterilised.

As far as services received from Mahila Mandal members during and after sterilisation are concerned, the evidence is mixed as shown in Panels D and E of Table 2. Almost half (46 per cent) of the acceptors from the post-training camps reported the assistance of Mahila Mandal members during the time of sterilisation, including having their children looked after by these members while they were undergoing sterilisation or shortly thereafter. On the other hand, however, a much smaller proportion, (22 per cent) of all acceptors of post-training camps reported receiving any follow up visits from Mahila Mandal members after sterilisation; this compares with 15 per cent among acceptors from pre-training camps.

Panels F and G of Table 2 indicate that all acceptors in both pre- and post-training camps received monetary incentives to undergo sterilisations at FPAI camps, while incentives in kind were received by 85 per cent of all acceptors in pre-training camps and all in post-training camps. And unfortunately, it appears that acceptors from post-training camps are significantly more incentive oriented than were those who accepted sterilisation in the pre-training camps. As many as 10.2 per cent of all acceptors from post-training camps reported that they would not have accepted sterilisation if there had not been an attractive incentive attached to it; this compares with a negligible 1.6 per cent of acceptors of pre-training camps. A possible interpretation of this is that Mahila Mandal members have been using the idea of incentives liberally as a means of luring eligible couples to accept sterilisation, with the result that acceptors have become increasingly incentive oriented.

### ***Overall Effect***

There is some evidence then that well trained local volunteers, and especially women volunteers such as Mahila Mandal members are an effective means whereby to pursue IEC activities in the area of family planning, and in particular in the recruitment of sterilisation acceptors. We have seen that post-training camps recruited on average a larger number of acceptors than did the pre-training camps: though the post-training camps comprised three quarters of the camps conducted, they recruited as many as 85 per cent of all acceptors.

Not only have the post-training camps succeeded in recruiting more acceptors, but also the composition of these acceptors suggest the powerful role played by Mahila Mandal involvement in attracting the poor, the lower castes and the illiterate sub-populations. Finally, as far as acceptor attitudes and perceptions are concerned the evidence suggests an increasing role of local volunteers in providing motivation, in providing information on forthcoming camps, and on assistance during the time of sterilisation. In other words the quality of pre-acceptance and during acceptance services rendered by these members has clearly been recognised.

There are however two limitations suggested by these findings. The first is the relatively poor follow up services given by the Mahila Mandal members, and the second is the apparently undue emphasis on incentives as a means of luring people to accept sterilisation. While follow up has increased only marginally, incentive orientation appears to have actually increased. Both these aspects need to be addressed in subsequent training programmes.

### **Profile of Mahila Mandal Motivators**

#### ***Characteristics of Mahila Mandal Motivators***

As indicated earlier, a total of 143 Mahila Mandal motivators were interviewed. Of these, 44.5 per cent were ordinary members and the remaining 56 per cent were also office bearers. The large majority (80 per cent) had been involved with Mahila Mandals for upto five years and 20 per cent for over five years. Prior to the training imparted by FPAI, 44 per cent had been motivating clients for sterilisation; some had even received family planning orientation from other sources. Over half (51.7 per cent) attributed their interest in the FPAI training programme and subsequent family planning motivation work to the enthusiasm of the FPAI; 39.9 per cent due to their own realisation of the need for disseminating family planning education among the rural masses and the rest were motivated by Presidents of the various Mahila Mandals.

Socio-economic and demographic characteristics of the Mahila Mandal motivators indicated first that they were considerably older than the typical

eligible woman they were expected to serve; their average age was 48.6 years, with an average of 4.6 living children. The couple protection rate among eligible motivators was 40 per cent at the time of interview, but a sizeable proportion of these had accepted sterilisation following their attendance at the FPAI training programme.

The average monthly household income was approximately the same as that of the acceptors (Rs. 788), as was the proportion coming from lower or backward castes (43 per cent). However, the illiteracy rate among the motivators was in fact considerably higher than that of the acceptors (67 per cent compared with 47 per cent and 57 per cent among pre- and post-training camp acceptors respectively), which is consistent with their older age distributions. It is interesting to note that even illiterate women, if properly trained, are credible motivators for sterilisation.

### *Post-training Perceptions regarding Role in FP Activities*

The large majority of the Mahila Mandal motivators expressed their satisfaction with the training programme, and two-thirds claimed to have benefitted considerably. Table 3 reports on the number of acceptors recruited by these motivators following the sterilisation camps on which this study is based, as well as the perceptions of motivators regarding their role.

First, Panel A shows that within a year after the post-training camps, that is, at the time of the survey, about half of the trained motivators reported that they were continuing family planning motivation work as part of their routine developmental activities for rural women though unfortunately, a sizeable proportion appear to be incentive driven themselves as seen in Table 3. Over the course of the year, as many as 86.7 per cent of these motivators had recruited one or more new acceptors; a total of 890 villagers had been recruited (excluding those recruited for the camps) to accept family planning methods. This works out to an average of 7-8 cases per motivator. Of the 890 acceptors, 69.4 per cent had accepted a terminal method, while 30.6 per cent had accepted a spacing method.

Almost half of all trained motivators encountered few difficulties in convincing eligible couples of the advantages of a small family and dispelling their fears regarding the adverse side effects of sterilisation (Panel B). In contrast, over one-fifth (21.7 per cent) reported difficulties in convincing eligible couples of the benefits of a small family, about one sixth (14.7 per cent) expressed difficulties in eradicating fears of side effects of sterilisation; about one tenth (9.1 per cent) expected a higher incentive payment and seven per cent suspected that the motivators had a vested interest (in terms of incentive) in their sterilisation.

Again, the evidence suggests that while pre-acceptance motivation has been satisfactory among these motivators, post acceptance follow up is negli-

TABLE 3

**Attitudes and perceptions of Mahila Mandal members following their training**

	%	N
Total	100.0	143
A <i>Recruitment of new acceptors over the last 12 months</i>		
% continuing FP work a year after camps	50.0	72
% who recruited any couples following the training	86.7	124
Total number of cases motivated by Mahila Mandal motivators	890	
Average number recruited per motivator	7 to 8	
Couples motivated by these Mandal members for		
Terminal methods	69.4	
Non-terminal methods	30.6	
B <i>Difficulties encountered</i>		
Difficult to convey economic benefits of small family convincingly	21.7	31
Fear of side effects	14.7	21
Insufficient incentives	9.1	13
Suspicion of motivator	6.9	10
No difficulties	47.6	68
C <i>Follow up services</i>		
Provided to all motivated cases	13.8	20
Provided to most motivated cases	5.0	7
Provided to few motivated cases	6.4	9
Not provided to a single motivated case	74.8	107
D. <i>Incentive payment</i>		
Too low to attract eligible couples	15.4	22
E. <i>Recommendations for enhancing FP acceptance</i>		
More sterilisation campaigns	36.4	52
Higher incentives for acceptors and motivators	21.0	30
More follow up	17.5	25
Motivators require IEC materials to distribute to potential acceptors	12.6	18
Need to avoid interference from other agencies	1.4	2
Other	11.1	16
F. <i>Recommendations for enhancing Mahila Mandal participation in FP work</i>		
Financial assistance	58.7	84
Regular training, refresher programmes	28.7	41
Contraceptives and IEC materials for distribution to acceptors/potential acceptors	18.2	26



ble (Panel C). As many as three quarters of Mahila Mandal motivators reported that not a single follow up visit was made.

On the subject of incentives (Panel D), as many as 85 per cent of the motivators observed that the level of incentives was satisfactory; the remaining 15 per cent observed that acceptance would have been higher if the incentive amounts had been increased. Nevertheless, it is heartening to note that 99 per cent of all motivators reported that they were willing to continue this work even in the absence of motivator incentives.

In order to improve their family planning motivational performance, the motivators suggested increasing the frequency of family planning campaigns (36.4 per cent), increasing the amounts of monetary incentives offered (21.0 per cent), increasing the frequency of post-sterilisation follow up (17.5 per cent) and being given greater responsibility in procuring and distributing family planning material (12.6 per cent), as indicated in Panel E of Table 3. Among recommendations for implementation, motivators expected assistance in the form of financial aid (59 per cent), regular training programmes (29 per cent) and the facility of distributing contraceptives and IEC materials to acceptors and potential acceptors (18 per cent).

In short, there is evidence that Mahila Mandal members can be successful in promoting the practice of family planning and particularly sterilisation among their villages. The fact that these women tend to have been considerably older than the average acceptor may, in the cultural conditions in the area under study, be a successful strategy in a culture in which older women wield power and credibility than do younger women.

Once again, the study points to the fact that while pre- acceptance motivation is routinely and effectively performed by the Mandal motivators, post acceptance follow up has not been sufficiently stressed.

### **Summary and Conclusions**

The current study was undertaken to ascertain the effectiveness of involving Mahila Mandal functionaries in family planning motivational work; Mahila Mandals have the advantage in that their members are women and opinion leaders. Their members are known to be working for women's welfare and thus have credibility; they are also local women and are more acceptable vehicles for changing attitudes than would be outsiders. In other words, they enjoy grassroots support in rural areas.

In order to involve Mahila Mandal members in family planning activities, a series of training programmes were organised for them on such subjects as family planning motivation, methods and so on, during the period October 1985 to March 1986. As a follow up to these training programmes, a series of sterilisation camps were also organised by the FPAI Haryana Branch. This study compares the responses of acceptors at camps held before

and after training and also elicits the views of trained Mandal members in terms of their achievements and perceptions.

The results of the survey provide evidence that the involvement of local women as motivators does in fact raise the level of acceptance among the more poor and illiterate population. In contrast, pre-training programme camps attracted a significantly larger proportion from upper and middle castes, higher income and educational groups and so on, as also reported in earlier studies<sup>5,6</sup>. Since the majority of the Mahila Mandal motivators themselves belonged to low income, low or backward caste agricultural families they were able to establish a greater rapport with acceptors belonging to the same stratum of society. Jain<sup>7</sup> reports considerably less involvement of this sub-population among Mahila Mandal functionaries in Gujarat, Jammu and Kashmir, Tamil Nadu, Orissa and Punjab, as a result of caste and other barriers. In fact, in these states, Mahila Mandal motivators failed to actually recruit acceptors, but rather, played a mainly supportive role in terms of raising awareness of family planning.

Another interesting feature among post-training programme sterilisation acceptors is the increase in male sterilisations. This finding suggests that well trained female motivators do in fact have the potential to raise the level of male involvement in the family planning programme.

Another factor which may have lent credibility to the messages offered by these Mahila Mandal motivators may have been the fact that they tended to be older than the average acceptor. This has several advantages in a culture in which female status is low. First, these training programmes have succeeded in changing attitudes precisely among that group which has traditionally been most averse to family size limitation. Second, in this culture it is older women, who exert power, have credibility and make decisions regarding younger women's reproduction. Hence they are better equipped to convey and convincingly explain to the target population their views on small families, reassure them regarding their doubts about potential health risks of sterilisation.

The argument that the successful performance of the post-training sterilisation camps can be attributed to the independent contributions of government grassroots level health workers cannot really be substantiated, since their involvement has been constant in both pre- and post-training sterilisation camps. The evidence points to the contribution of these trained mahila mandal motivators as an important factor underlying the increase in family planning acceptors in the post-training period.

The evaluation has pointed to a number of shortcomings. First, with the passage of time, the enthusiasm of the Mahila Mandal motivators has noticeably decreased: while as many as 87 per cent of the trained members motivated cases immediately after the training period, this proportion fell to 50 per cent a year later. This points to the need for regular follow up and

refresher training programmes to sustain the level of their involvement in the recruitment of new acceptors.

As far as quality of services are concerned, there is evidence both from the acceptors and from the motivators, that while pre-acceptance motivation has been well conducted and appreciated, post-acceptance follow up has been relatively neglected. It is essential then that the training programmes stress the role of adequate follow up.

As far as the role of incentives is concerned, the evidence suggests that acceptors of post-training sterilisation camps appear to be more incentive-oriented than were those who had been sterilised in pre-training sterilisation camps. A larger proportion of acceptors at post-training camps, compared with those at pre-training camps, admit that incentives played an important role in their becoming sterilised. Further, a number of motivators expressed the view that acceptance would have been higher if incentives were appropriately increased. On the other hand, however, following the training, motivators are willing to continue this work even in the absence of motivator incentives.

Another limitation observed in this study is the concentration on terminal methods; given their success in motivating women to accept the idea of small families, a next step would be training to assist motivators to popularise spacing methods.

The results of the study make a strong case for involving local volunteers in promoting the concept of the two child family and family planning in rural areas. The evidence suggests that contraceptive acceptance can increase significantly amongst the most needy sections of society if motivators : (1) are efficiently trained in motivational strategies, (2) are local volunteers working at the grassroots level, (3) belong to the same socio-economic group as the targeted acceptors and (4) practice contraception themselves. And in this exercise, the quality of the training imparted cannot be underscored.

In short, this study has indicated that well trained, local women volunteers can have a significant impact on enhancing the acceptance of sterilisation among rural couples. The idea of tapping the wide network of Mahila Mandals which exist in rural India to integrate family planning motivation along with their regular development work must be considered.

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# **IUD INSERTIONS BY PARAMEDICAL HEALTH WORKERS : A FIELD EXPERIENCE**

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## **Introduction**

It is a well established fact that eligible couples in our country have not been adopting spacing methods to the desired extent. One reason for this, could be the relative paucity of female medical practitioners in peripheral areas. Female paramedical workers such as nurse midwives and auxiliary nurse midwives, were therefore specially trained in the technique of Cu-T insertions and delegated to conduct them in order to boost up the IUD programme in the rural parts of the state of Maharashtra.

## **Objectives**

Although the IUD programme involving paramedical personnel appeared to be a great success, it required some evaluation as regards the morbidity experiences of the acceptors and the continuation rates under these situations. With this in view, a follow-up study of the IUD acceptors was carried out.

The investigation examined issues concerning the safety and practicability of utilising paramedical health personnel for performing IUD insertions. Attempts were also made to find out the possible correlation between the morbidity profile of the acceptors with the training status of the service providers and the place of insertion.

## **Sample and Methodology**

Acceptors of Cu-T served by the rural health centres in the districts of Pune and Satara between 1st January and 31st March 1983 were enrolled for the study. Information regarding their socio-demographic characteristics and relevant medical problems prior to Cu-T insertion was collected. Of a total of 1573 acceptors thus selected, 1527 could be followed up for a period of one year after the insertion.

Four visits were scheduled during this period—after seven days, after one month, after six months, and finally at the end of one year from insertion.

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All complaints related to the menstrual cycle or otherwise, were noted during these visits and special note was made regarding the nature of complications and treatment if any, received by them. Further, the status of the Cu-T, that is, whether it had been expelled, removed or was in situ, was ascertained. The reasons for removal, whenever confirmed, were noted. All the information was collected by the nurse midwife working at the rural health centre. The retention rates of Cu-T at the end of one year and the reasons for discontinuation were analysed.

### **Result:**

#### *Socio-demographic Profile of Acceptors*

As many as 84.3 per cent of the acceptors were between 20 to 30 years of age; 80 per cent of the husbands were between 25 to 35 years of age. Almost three-fourths (73 per cent) had one or two living children, 26 per cent had more than three living children, and 8 per cent had opted for the IUD but had no living children.

About 68 per cent of the acceptors and 83 per cent of the husbands were literate. Almost half (46.6 per cent) of the husbands had completed school (upto S.S.C.E.) or had higher education, and most of them were teachers by profession. About 39 per cent of the husbands were agricultural workers. The majority of the acceptors were housewives. About 95.5 per cent of the acceptors were Hindu by religion.

#### *Time of Insertion*

About half (51.6 per cent) of the insertions were performed soon after delivery, 45.2 per cent were interval insertions following menstruation, and only 3.3 per cent had been performed following abortion.

#### *Retention Rate*

At the end of one year, 46.8 per cent of the IUDs had been retained while 53.2 per cent had either been expelled or removed for various reasons. The reasons for discontinuation and the time of discontinuation since insertion are given in Table 1.

The main reason for discontinuation was the occurrence of side effects, such as bleeding and pain with the use of the device, as expressed by almost half (49.2 per cent women) of the Cu-T users. Opposition from the husband or mother-in-law was the next common reason for discontinuation as stated by a fourth (26.8 per cent) of the acceptors.

One-fifth or 19.2 per cent of the discontinuations resulted in the first month of insertion and 55.9 per cent within the first three months of insertion. The discontinuation rates declined thereafter.

TABLE 1

*Distribution of discontinuers by reason and time since insertion*

Reason for discontinuation	Duration since insertion (days)						Total
	< 7	8-29	30-90	91-180	181-365	366+	
Improper motivation	7	2	12	4	6	—	31(3.8)
Opposition by husband/in-laws	9	34	87	55	25	8	218(26.8)
Side effects	25	60	156	86	56	17	400(49.2)
Pregnancy desired	—	4	14	20	23	18	79( 9.7)
Others	7	8	29	15	20	6	85(10.5)
Total	48 (5.9)	108 (13.3)	298 (36.7)	180 (22.1)	130 (16.0)	49 (6.0)	813 (100.0)

Figures in brackets denote percentages.

### *Complications*

Immediate post-insertion complications were reported by 165 acceptors (10.9 per cent). Uterine perforation occurred in three cases and cervical laceration in one case. Excessive vaginal bleeding was experienced by 5.8 per cent of the acceptors.

Eleven (0.7 per cent) women required indoor treatment for various complications while 422 (27.6 per cent) were treated at the out patient clinic. Of the total sample of 1527 acceptors, as many as 1094 (71.6 per cent) did not require any treatment.

### *Pre-insertion Complaints and Discontinuation Rate*

The complaints registered by the acceptors prior to Cu-T insertion were analysed for finding out their relation, if any, with the removal of the device. Four-fifths or 80.7 per cent of the acceptors had no gynaecological complaint prior to insertion. Nevertheless, their removal rate was 51.0 per cent. The removal rate was slightly higher (57.1 per cent) for acceptors who had registered some gynaecological complaint prior to insertion. Pre-insertion symptoms like pelvic pain, leucorrhoea and dyspareunia were associated with higher removal rates.

The reasons for discontinuation given by 629 women who did not have any problem prior to insertion were similar to those given by other acceptors.

### *Training Status of Staff Inserting the IUDs*

The nursing staff working at the rural health centres (nurse midwife and auxiliary nurse midwife) had carried out 85.7 per cent of the total Cu-T in-

TABLE 2

Discontinuers and removal rates by pre-insertion symptoms

Pre-insertion Symptom	Total	Discontinuers	Removal Rate (%)
No complaint	1233(80.7)	629(77.4)	51.0
Pelvic pain			
with weakness	137( 8.9)	96(11.8)	70.1
Low backache	101( 6.6)	60( 7.5)	59.4
Vaginal discharge	26( 1.7)	15( 1.8)	57.7
Abdominal pain	23( 1.5)	6( 0.7)	26.1
Dyspareunia and pelvic pain	7( 0.5)	7( 0.8)	100.0
Total	1527(100.0)	813(100.0)	53.2

Figure in brackets denote percentages.

sections at their centres; only 12.5 per cent had been inserted by the doctor (Table 3). There was no difference in the removal rate between the two groups. The discontinuation rate was 52.8 per cent for insertions carried out by the nursing personnel, whereas it was 57.1 per cent for those performed by doctors.

TABLE 3

Discontinuation rates by person inserting the IUD

Person performing IUD insertion	Total	Discontinuers	Removal Rate (%)
Qualified medical practitioner	187(12.3)	113( 3.3)	56.5
Intern	4( 0.2)	1( 0.1)	25.0
P H Nurse	26( 1.7)	15( 1.0)	37.7
Nurse Midwife	1000(65.5)	523(64.3)	52.8
Auxiliary Nurse			
Midwife/Female			
Field Worker	308(20.2)	161(19.8)	52.3
Others	2( 0.1)	—	—
Total	1527(100.00)	813(100.0)	53.2

An analysis of the training status of the nursing staff revealed that the period of training varied from three days to three months and the number of insertions carried out during the training period were between 1 to 50.



The discontinuation rate was lowest when 10 to 15 insertions had been performed during the course of training and the duration of training was between 8 to 14 days.

### *Place of Insertion*

Three-fourths (62.1 per cent) of the total insertions had been carried out in the rural health centres or subcentres, 33.7 per cent were carried out in the acceptor's house, and only 2 per cent at the district hospitals. The discontinuation rate was highest (63.8 per cent) for insertions carried out at home. The rates were comparable for the other two locations.

The discontinuation rates within the first three months of insertion were considerably higher (42.1 per cent) for domiciliary insertions, while they were 19.7 per cent for insertions performed at the health centres, and 26.2 per cent for insertions conducted at the subcentres.

### *Expulsions*

In all, 19 (1.2 per cent) expulsions were reported. The period of retention before spontaneous expulsion ranged from four hours to one year.

While ten of the expulsions occurred within three months of insertion, six occurred after post-partum insertion, of which four resulted within the first month of insertion. The expulsion rate was 0.8 per cent following post-partum insertion as against 1.9 per cent following interval insertion.

All the 19 expulsions occurred following an insertion performed either at home or at the subcentre. The expulsion rate for domiciliary insertions was 2.3 per cent (12/514) and for insertions at the subcentre, it was 1.5 per cent (7/457). No pregnancy was reported during the follow-up period of one year.

### *Discussion*

IUD insertions by paramedical workers is a need of the time. Conflicting views have been expressed about the safety of such insertions in the field situation. The reluctance on the part of rural women to accept the services of male medical practitioners and the relative paucity of female medical practitioners in remote rural areas, prompted the government to look for an alternative approach - that of training and utilising female paramedical workers in the IUD service programme.

The findings of the present study, wherein nearly 85 per cent of 1527 insertions were carried out by the nursing staff, indicates that the approach appears to be reasonably safe with an immediate complication rate of only 0.7 per cent.

The overall continuation rate at the end of one year was around 47 per cent which is rather low. This could be improved by more careful selection

of cases, and with special efforts to exclude cases having pelvic pain and dyspareunia. More effective motivation, especially of those family members who are involved in decision-making, such as the husband and in-laws of the acceptor through repeated home visits, could improve continuation rates.

Nearly 55 per cent of the removals took place within the first three months following insertion. It is felt that more frequent home visits by the health worker during this period could prove useful in sustaining motivation and improving continuation rates. Again, by avoiding domiciliary insertions and resorting to clinic insertions would reduce expulsion rates.

Failure of the device resulting in pregnancy was not observed in this study. This could be because most of the insertions were post-partum, and in lactating rural women the pregnancy rates during the first year of delivery are, even otherwise, known to be quite low.

The study suggests that the training of paramedical personnel in IUD insertion should be carried out in a training institute and by experienced trainers. Further, all aspects of the IUD programme should be included in the curriculum, with special emphasis on the selection of cases and technique of insertion. A training programme of about two weeks with a minimum of 15 to 20 insertions performed by each trainee under supervision, would certainly improve the safety and acceptability of such insertions among rural women.

# **TRENDS AND CORRELATES OF FERTILITY IN THE DISTRICTS OF KARNATAKA, 1951-81**

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## **Introduction**

India is one of the countries which has a rich historical database in demography. However, good demographic research on historical data is scarce. Research findings at a particular point of time have more relevance when compared with past findings. For instance, to understand better the post-independence developmental changes, we require a better understanding of the pre-independence developmental level. Further, an understanding of the past may hold relevance in terms of coping with some aspects of future development.

Despite its deficiencies, the sample registration system (SRS) is still one of the most useful sources of information about vital rates in India. Though the SRS provides fertility data at regular intervals of two to three years since 1965, the information is restricted to the state level. Again, sample surveys designed to study historical trends in fertility, have been confined to one or two districts of a state. Hence, the census remains the only source of information for studying fertility trends over a long period of time.

## **Objective**

Against the above background, the present paper attempts to study the trends in fertility in the districts of Karnataka at quinquennial time intervals for the three decades—1951-56 to 1976-81, and to identify the correlates of fertility in the districts of Karnataka during 1976-81. The fertility measure used in this study is the Total Fertility Rate.

## **Sources of Data and Methodology**

The data on the age-sex distribution utilised for the study have been obtained from the 1981 census and the previous two censuses viz, 1971 and 1961<sup>1</sup>. The specific data used are district-wise population data for the 0-4 and 5-9 age groups, and that for women in the 15-49 and 20-54 age groups for the three decades (1961-1981). District-wise infant mortality rates (IMRs) for the periods 1951-61, 1961-71, and 1971-81 have been obtained from Ram<sup>2</sup> and Patil<sup>3</sup>, and district-level data on selected socio-economic and

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cultural indicators such as female age at marriage, female literacy, percentage of Muslim population, couple protection rate, and per capita income for the year 1981, have been obtained from another secondary source<sup>6</sup>.

#### *Method Used for Estimating TFR*

Rele's refined method was used to estimate the Total Fertility Rate (TFR). Rele's original method has been briefly explained in the next paragraph in order to give a better understanding of the concept of the refined method.

Rele's original method estimates the Gross Reproduction Rate (GRR) based on an extension of stable population concepts<sup>7</sup>. Rele showed that at a given level of mortality, the relation between the child woman ratio (CWR) and GRR is approximately linear, and developed a set of regression coefficients for different mortality levels, indexed by life expectancy at birth ( $e$ ) which can be used to estimate the GRR from CWR. CWR is measured as either (i) the ratio of children aged 0-4 years to women of 15-49 years of age (CWR 1) or (ii) the ratio of children aged 5-9 years to women aged 20-54 (CWR 2). Since children aged 0-4 years enumerated at the time of the census were born during the previous five years, the GRR calculated from CWR 1 refers to the previous five years. Similarly, the GRR calculated from CWR 2 refers to the period five to ten years before the census. The TFR is calculated by multiplying the estimated GRR by the sex ratio at birth

Rele himself observed certain limitations of this method. The TFR estimates were severely affected by age distribution; hence estimates based on the 0-4 age group were found to be underestimated because of a census undercount, while those based on the 5-9 age group were found to be overestimated because of a census overcount of the population in this age group. In order to overcome this serious limitation, Rele, in a recent paper<sup>8</sup> refined his original method to compensate for distortions due to misreporting of age or omission of young children.

#### *Rele's Refined Method*

Rele's refined method utilises data from two or more successive censuses preferably at about ten year intervals, and yields serial estimates of fertility at five year time periods. Since the present paper utilises 1961, 1971 and 1981 census data, the serial fertility estimates for the periods 1951-56, 1956-61, 1961-66, 1966-71, 1971-76 and 1976-81 could be calculated. The TFR estimates for 1951-56, 1961-66 and 1971-76 were derived from the number of children aged 5-9 years (CWR 2), while those for 1956-61, 1966-71 and 1976-81 were derived from the number of children aged 0-4 years (CWR 1). Hence the fertility estimates for 1951-56, 1961-66 and 1971-76 are overestimates (see Table 1). By appropriately combining the trends in underestimation and overestimation in the three censuses, it is possible to

arrive at fertility estimates that are considerably accurate.

Consider, for example, the trend determined by the fertility estimates for 1951-56 and 1961-66. The average of these two estimates yields an intermediate estimate for 1956-61. This intermediate estimate for 1956-61 is an overestimate because the estimates for 1951-56 and 1961-66 are overestimates. Similarly, the average of 1956-61 and 1966-71 yields an intermediate estimate for 1961-66 which is an underestimate. These intermediate estimates can be combined with the original estimates for 1956-61 and 1961-66 respectively. Thus, we have two fertility estimates for 1956-61, one an overestimate and the other an underestimate, and likewise for 1961-66. The true value should lie somewhere in between as a weighted average of the two estimates. By examining the nature of age reporting errors for India, Rele found that weights of 0.7 and 0.3 applied to the upper and lower limits, yielded good results<sup>9</sup>. By using these weights, fertility estimates for 1951-56, 1956-61, 1961-66, 1966-71, 1971-76 and 1976-81 for the districts of Karnataka were calculated and are presented in Column 6 of Table 1. Details of the application of the method are given in the Appendix to this paper.

### *Reliability of the Estimates*

To assess their reliability, the TFRs estimated by Rele's refined method were compared with estimates available from other sources. The TFRs compiled from different sources at different periods are presented below.

Survey	Reference year	Area	TFR	Present estimate
Mysore Population Study	1951-52	Mysore state	6.08	6.18 (1951-56)
Dharwad Demographic Survey	1961-62	Dharwad district	6.69	5.81 (1961-66)
Demographic Survey—Shimoga	1962-63	12 villages in Shimoga district	6.98	6.65 (1961-66)
Census Estimates	1981	Karnataka state	4.70	4.50 (1976-81)

As seen from the table above, the Mysore Population Study<sup>9</sup> yielded a TFR estimate of 6.08 for selected rural areas of Mysore State. This estimate is very close to our estimate of 6.18 for the period 1951-56. A demographic survey conducted in Dharwad town in 1961-62<sup>10</sup> reported a TFR of 6.55 which is higher than our estimate of 5.81 for the period 1961-66. This discrepancy may be attributed to the small sample size covered in the survey. The TFR of 6.98 given by the demographic survey of Shimoga district for

1962-63<sup>11</sup> is quite comparable with the present estimate of 6.65 for the same district (Shimoga) for the period 1961-66. The census estimates<sup>12</sup> of TFR obtained through the P/F ratio method for the period 1981 confirm the reliability of our estimates for the period 1976-81. It is possible that the former are on the upper side because of the data used and assumptions involved in that method.

In general, in spite of the differences in the TFRs obtained from different sources, the estimates obtained by Rele's refined method are, by and large, acceptable. In the light of the fact that the concept of Rele's refined method is highly acceptable, the TFRs given in Column 6 of Table 1 were used to study the trends and correlates of fertility in the districts of Karnataka during 1951-56 to 1976-81.

### Results and Discussion

#### *Fertility Trends in Districts of Karnataka State, 1951-81*

Table 1 presents estimates of TFR for the different districts of Karnataka for five-year periods between 1951 and 1981.

TABLE 1

Estimates of total fertility rate (TFR) for the districts of Karnataka, 1951-81

District/ State	Year	'e'	CWR 1	CWR 2	TFR	
					Preliminary estimates	Final estimates
Bangalore	1951-56	39.68		789	6.81	6.43
	1956-61	42.68	627		5.12	6.04
	1961-66	47.50		738	6.04	5.69
	1966-71	50.50	597		4.69	5.24
	1971-76	58.84		649	4.93	4.71
	1976-81	61.34	500		3.71	4.14
Belgaum	1951-56	40.13		754	6.49	6.22
	1956-61	43.13	685		5.59	6.14
	1961-66	45.35		753	6.26	6.02
	1966-71	48.35	677	5.36	5.67	
	1971-76	51.48	676	5.38	5.20	
	1976-81	53.81	542		4.18	4.42

TABLE 1 (Contd.)

District/ State	Year	'e'	CWR 1	CWR 2	TFR	
					Preliminary estimates	Final estimates
Bellary	1951-56	34.56		723	6.57	6.20
	1956-61	37.56	614		5.16	6.02
	1961-66	45.35		747	6.22	5.87
	1966-71	48.85	637		5.04	5.77
	1971-76	50.59		758	5.95	5.61
	1976-81	53.09	577		4.55	5.20
Bidar	1951-56	44.65		731	6.10	5.96
	1956-61	47.65	647		5.16	5.81
	1961-66	49.41		757	6.12	5.96
	1966-71	52.41	759		6.01	6.06
	1971-76	53.02		767	6.06	5.23
	1976-81	55.52	602		4.61	4.63
Bijapur	1951-56	37.44		711	6.28	6.06
	1956-61	40.44	675		5.57	6.06
	1961-66	44.11		744	6.24	6.02
	1966-71	47.11	685		5.47	5.83
	1971-76	52.26		726	5.75	5.53
	1976-81	54.76	596		4.57	4.87
Chikmagalur	1951-56	45.45		789	5.92	5.59
	1956-61	48.45	727		5.77	6.10
	1961-66	53.16		834	6.59	6.22
	1966-71	56.16	649		4.96	5.59
	1971-76	53.56		654	5.14	4.90
	1976-81	56.06	479		3.65	4.12
Chitradurga	1951-56	43.06		811	6.85	6.43
	1956-61	46.06	686		5.51	6.41
	1961-66	51.14		843	6.73	6.30
	1966-71	54.14	662		5.10	6.00
	1971-76	48.19		740	6.04	5.65
	1976-81	50.69	558		4.36	5.14
Kodagu	1951-56	46.97		804	6.20	5.94
	1956-61	49.97	718		5.65	5.98
	1961-66	47.50		735	6.02	5.75
	1966-71	50.50	580		4.55	4.94
	1971-76	49.10		552	4.18	4.18
	1976-81	51.60	485		3.79	4.12

TABLE 1 (Contd.)

District/ State	Year	'e'	CWR 1	CWR 2	TFR	
					Preliminary estimates	Final estimates
Dharwad	1951-56	35.96		760	6.81	6.96
	1956-61	38.96	721		6.02	6.18
	1961-66	44.45		681	5.69	5.81
	1966-71	47.45	772		6.16	5.73
	1971-76	53.83		690	5.43	5.36
	1976-81	56.33	569		4.32	4.02
Gulbarga	1951-56	44.45		701	5.87	5.67
	1956-61	47.45	612		4.87	5.67
	1961-66	47.50		716	5.87	5.67
	1966-71	50.50	706		5.55	5.79
	1971-76	51.19		739	5.92	5.67
	1976-81	53.69	601		4.65	4.85
Hassan	1951-56	44.65		771	6.45	6.30
	1956-61	47.65	696		5.55	5.95
	1961-66	45.47		772	5.79	5.67
	1966-71	48.47	655		5.20	5.47
	1971-76	53.56		675	5.32	5.10
	1976-81	56.06	513		3.92	4.12
Kolar	1951-56	44.45		741	6.20	5.77
	1956-61	47.45	607		4.83	5.77
	1961-66	49.00		763	6.18	5.75
	1966-71	52.00	608		4.73	5.55
	1971-76	56.07		728	5.63	5.26
	1976-81	58.57	545		4.1	4.81
Mandya	1951-56	39.68		772	6.67	6.24
	1956-61	42.68	664		5.43	6.40
	1961-66	39.44		803	6.96	6.51
	1966-71	42.44	674		5.51	6.16
	1971-76	51.48		744	5.94	5.63
	1976-81	53.98	561		4.32	4.83
Mysore	1951-56	40.13		755	6.51	6.16
	1956-61	43.13	627		5.12	5.94
	1961-66	50.08		749	6.04	5.71
	1966-71	53.08	617		4.77	5.41
	1971-76	52.02		671	5.30	5.04
	1976-81	55.52	523		4.00	4.53



TABLE 1 (Contd.)

District/ State	Year	'c'	CWR 1	CWR 2	TFR	
					Preliminary estimates	Final estimates
Uttar Kannada	1951-56	41.21		757	6.65	6.10
	1956-61	44.21	689		5.59	6.24
	1961-66	46.25		790	6.53	6.16
	1966-71	49.25	639		5.06	5.51
	1971-76	58.21		639	4.88	5.32
	1976-81	60.71	506		3.77	4.10
Raichur	1951-56	41.69		659	5.61	5.59
	1956-61	46.69	670		5.43	5.49
	1961-66	50.08		668	5.38	5.36
	1966-71	53.08	680		5.26	5.61
	1971-76	47.12		744	6.12	5.81
	1976-81	49.62	620		4.9	5.22
Shimoga	1951-56	45.65		831	6.96	6.55
	1956-61	48.65	744		5.43	6.69
	1961-66	49.42		895	5.38	6.65
	1966-71	52.42	705		5.26	6.10
	1971-76	57.38		736	6.12	5.36
	1976-81	59.88	515		4.90	4.28
Dakshina Kannada	1951-56	37.03		721	6.38	6.02
	1956-61	40.03	654		5.43	6.10
	1961-66	39.44		740	6.41	6.04
	1966-71	42.44	601		4.92	5.32
	1971-76	59.48		607	4.59	4.45
	1976-81	61.98	444		3.28	3.55
Tumkur	1951-56	44.11		775	6.32	5.90
	1956-61	47.11	635		5.08	6.02
	1961-66	45.65		782	6.49	6.04
	1966-71	48.65	625		4.96	5.57
	1971-76	53.56		660	5.20	4.98
	1976-81	56.06	519		3.96	4.65
Karnataka State	1951-56	39.95		754	6.51	6.18
	1956-61	42.95	660		5.38	6.08
	1961-66	47.60		762	6.24	5.94
	1966-71	50.60	652		5.12	5.61
	1971-76	53.83		691	5.43	5.18
	1976-81	56.33	536		4.08	4.47

**Note on Table 1**

(1) The expectation of life at birth, 'e' for quinquennial periods from 1951-56 to 1976-81 for each district have been obtained from the Infant Mortality Rates for the decades 1961, 1971 and 1981. IMRs for 1951-61 and 1961-71 for all districts have been taken from Ram<sup>4</sup> and the IMRs for 1971-81 have been obtained from Patil<sup>5</sup>. With the help of IMR the appropriate mortality level was obtained from Coale and Demney model life tables West pattern for 1961 and 1971 and South pattern for 1981. From these mortality levels, 'e' for 1961, 1971 and 1981 were computed for all districts by interpolating the decadal values of infant mortality rates for 1951-61, 1961-71 and 1971-81. Backward extension gave values of 'e' for earlier years

(2) TFR was obtained by multiplying GRR by 2.04 (sex ratio at birth)

During the three decades viz. from 1951-56 to 1976-81, the TFR for Karnataka state as a whole declined from 6.18 to 4.47 - a decline of 28 per cent. For the decade 1951-56 to 1956-61, nine districts viz. Bangalore, Belgaum, Bellary, Bidar, Chitradurga, Dharwad, Hassan, Mysore and Raichur, registered a fertility decline as measured by their estimated TFRs. Among these, Dharwad district showed a spectacular decline of more than eleven per cent whereas the district of Chitradurga showed the minimum decline (0.31 per cent). Table 1 also indicates that the districts of Chikmagalur, Kodagu, Mandya, Uttara Kannada, Shimoga, Dakshina Kannada and Tumkur experienced high fertility during the same period. Chikmagalur experienced a fertility increase of 9.12 per cent whereas Kodagu registered the least increase of 0.67 per cent. In the three districts of Bijapur, Gulbarga and Kolar, fertility was constant during 1951-56 to 1956-61.

The decade 1961-71 registered a TFR decline of about 5.5 per cent for the state as a whole. Of the nineteen districts, sixteen experienced a fertility decline. Among these, Kodagu registered the highest decline of about 14 per cent and Dharwad the lowest, of 1.32 per cent. Thus, fertility increased only in three districts (Bidar, Gulbarga and Raichur) as against seven during 1951-61. The fertility estimate for the quinquennium 1966-71 marks the beginning of a decline. This decline appears to coincide with the effective implementation of the family planning programme, with a shift from a clinic-based to an extension approach in 1966. Turning to the decade 1971-81, the state as a whole registered a fertility decline of about 14 per cent, with all the nineteen districts experiencing a decline; the highest (25 per cent) was in Dharwad district and the least (1.43 per cent) in Kodagu.

To conclude, the TFR was 6.0 or even higher in most of the districts and was stable or even increased in some districts during the quinquennial periods 1951-56 to 1961-66. The period around 1966 seems to have been the turning point in Karnataka's fertility history. It can also be concluded from the analysis that there is a remarkable geographical consistency in the

fertility estimates, with the southern districts showing lower fertility and the northern districts showing higher fertility during 1976-81. The decline accelerated with an estimated TFR of 5.61 in 1966-71, 5.18 in 1971-76 and 4.47 in 1976-81. Thus, there is a clear indication of a decline of more than one child (1.14) per woman during 1966-71 to 1976-81.

### *Correlates of Fertility in Karnataka District, 1976-1981*

Many studies in India and abroad have established that socio-economic and cultural factors are likely to influence fertility behaviour. Hence in this section, an attempt has been made to relate a few socio-economic variables namely, female age at marriage, contraceptive use, female literacy, per capita income and per cent Muslim population, with TFR

The major limitation of any study which attempts to examine fertility correlates in the districts of Karnataka is the non-availability of data on socio-economic and cultural factors for the decades 1961 and 1971. Hence, for the purpose of this analysis, such data pertained to the year 1981 while the TFR estimates related to the period 1976-81.

The TFR values and socio-economic and cultural factors were grouped into two categories. The first consisted of TFR values above the state average and the second, of those below the state average. A similar classification was made with respect to the socio-economic and cultural data and is presented in Table 2.

#### *1. Female Age at Marriage:*

Table 2 indicates that of all the districts in the state, Bijapur has the lowest female age at marriage of 16.7 years whereas Dakshina Kannada has the highest, of 22.5 years. Further, districts with lower TFR are observed to exhibit a higher female age at marriage and those having higher TFR are found to have a lower female age at marriage.

The correlation coefficient between the mean age at marriage of females and TFR was 0.77, indicating that the two are highly and negatively correlated (Table 3).

#### *2. Couple Protection Rate (CPR):*

From Table 2 it is evident that Kodagu district has the highest couple protection rate and, at the same time, has the lowest TFR among all the districts of the state. On the other hand, Raichur which has the lowest couple protection rate has the highest TFR. By and large, districts with higher TFRs had lower rates of couple protection, with a few exception.

The analysis shows an inverse relationship between couple protection rate and total fertility rate. The correlation coefficient between CPR and TFR was -0.20 (Table 3).

TABLE 2

Total Fertility Rate (1976-81) and selected socio-economic and cultural indicators in the districts of Karnataka, 1981

District	TFR (Rele)	Female age marriage (years)	Couple protec- tion rate	Female literacy (%)	Per capita income (Rs.)	% Muslim population
<b>Low Fertility</b> (= / < State average)						
Dakshina Kannada	3.55	22.5	22.9	45.0	1314	13.2
Kodagu	4.12	21.7	49.8	43.3	2284	13.4
Chickmagalur	4.12	20.8	32.0	34.1	1657	8.0
Uttar Kannada	4.10	21.1	39.6	38.3	1323	9.7
Bangalore	4.14	20.2	21.7	41.7	1335	11.7
Hassan	4.12	20.2	17.5	26.3	1336	5.6
Shimoga	4.28	20.5	32.2	34.6	1401	10.5
Tumkur	4.45	19.3	23.6	29.4	924	7.3
Dharwad	4.02	19.1	29.6	29.7	1056	15.4
Belgaum	4.42	17.9	25.6	23.9	1111	9.6
<b>High Fertility</b> ( > State average)						
Chitradurga	5.14	19.2	29.4	27.1	1291	9.2
Kolar	4.81	19.0	21.7	22.8	869	11.6
Mandya	4.83	18.3	28.7	19.8	1187	4.1
Bellary	5.20	17.9	21.1	19.2	1286	12.1
Bijapur	4.87	16.7	18.3	18.4	948	12.7
Bidar	4.63	17.4	20.0	14.4	1058	18.0
Gulbarga	4.85	17.0	17.5	13.7	1044	16.7
Raichur	5.22	18.2	16.6	13.6	1131	12.3
Mysore	4.53	19.1	24.1	23.0	1314	6.9
All districts	4.47	19.2	24.4	27.8	1208	11.1

TABLE 3

Zero order correlation coefficients between TFR  
and selected socio-economic indicators

Variable	Correlation Coefficient
Female literacy	-0.81
Female age at marriage	-0.77
Percentage of Muslim population	+0.016
Couple protection rate	-0.2
Per capita income	-0.3

### 3. *Female Literacy:*

Districts with higher female literacy were observed to have lower TFRs (Table 2). For instance, Dakshina Kannada district has the highest female literacy rate but the lowest TFR. On the other hand, Raichur has the lowest female literacy but the highest TFR. Further, the correlation between female literacy and TFR was highly negative ( $-0.81$ ).

### 4. *Per Capita Income:*

Income is an important economic factor likely to affect fertility behaviour. It can be seen from Table 2 that districts with higher TFRs have a lower per capita income. For instance, Bijapur which has a comparatively higher TFR, has a comparatively low per capita income. On the other hand, Kodagu, with a lower TFR, has the highest per capita income. Thus, in the present analysis, we found a negative correlation ( $-0.30$ ) between TFR and per capita income. A similar observation has been made by Srinivasan<sup>13</sup>.

### 5. *Proportion of Muslim Population.*

Religious practice and taboos are likely to play an important role in determining fertility behaviour. It has generally been noticed that Muslims have comparatively higher fertility<sup>14</sup>. The data in Table 2 indicate that districts which have a relatively higher proportion of Muslim population, have high fertility rates, with a few exceptions. For example, Bidar district which has a TFR of 4.63 has an 18 per cent Muslim population. By and large, districts with low TFRs also had lower percentages of Muslim population and the reverse was true, with a few exceptions. As found in other studies, here also a positive correlation between the percentage of Muslim population and TFR (0.016) was observed, but the relationship was very weak.

## **Policy Implications**

The district differentials in fertility in the state are largely due to regional disparities in the levels of social and economic development. The implications of these findings are that the northern districts of Karnataka require more intensified efforts to improve their social and economic conditions in order to reduce fertility levels. The performance of the family planning programme in these districts needs to be improved. If this is done, the fertility rates in the districts and also for the state as a whole would decline further.

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#### APPENDIX

Rele's refined method has been explained with reference to the estimation of TFR for Karnataka State. The procedure is as follows: two types of CWRs (CWR 1 and CWR 2 as mentioned in the text) are computed from the reported unsmoothed age-sex distribution from the 1961, 1971 and 1981 censuses of Karnataka. From these CWRs and the estimates of  $e$ , preliminary

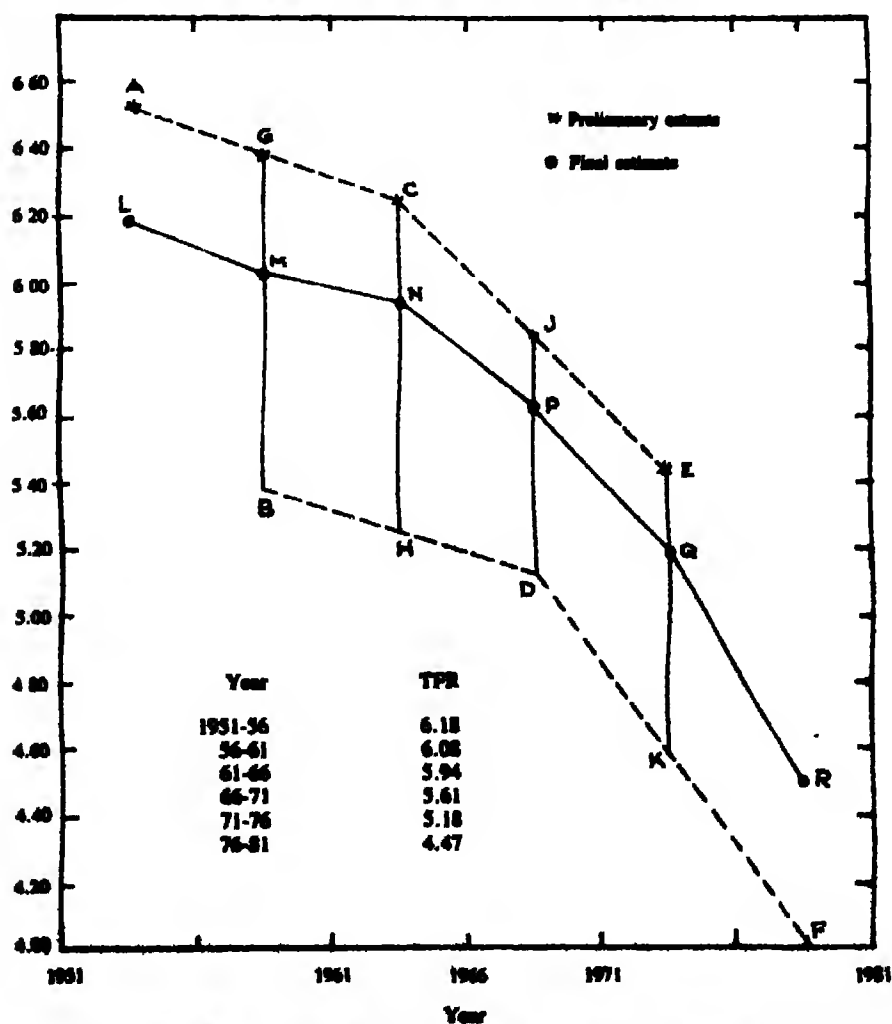
estimates of TFR are first obtained for quinquennial periods from 1951-56 to 1976-81.

The preliminary estimates of TFR from the reported unsmoothed age-sex distributions are shown by points A, B, C, D, E, and F in Figure 1 which clearly depicts a fluctuating pattern. These points represent two levels and trends of estimated TFR, shown by BDF and ACE depending upon 0-4 or 5-9 age groups respectively. The refinement is simply to combine these two levels and trends of fertility by using suitable weights. By comparing the CWRs based on unsmoothed and smoothed age distributions, Rele has concluded that, on average, CWR 1 based on the unsmoothed age-sex distribution is understated by 9.2 per cent and CWR 2 is overstated by 4.3 per cent. In other words, the understatement of CWR 1 was related to the overstatement of CWR 2 roughly in the ratio 7 to 3<sup>8</sup>. The procedure is pictured in Figure 1 with the formulae given below.

$$\begin{aligned} G &= 0.5 (A + C) & J &= 0.5 (C + E) \\ H &= 0.5 (B + D) & K &= 0.5 (D + F) \\ M &= 0.3B + 0.7G & N &= 0.3H + 0.7C \\ P &= 0.3D + 0.7J & Q &= 0.3K + 0.7E \end{aligned}$$

$$L = \frac{A(N)}{C} \quad R = \frac{F(P)}{D}$$

The points L, M, N, P, Q, R are the final estimates and represent the levels and trends of estimated TFR in Karnataka during the last three decades.



**Total Fertility Rates for Karnataka State, 1951-56 to 1976-81**

# **A COMPARATIVE STUDY OF LAPAROSCOPIC AND CONVENTIONAL TUBECTOMY ACCEPTORS IN UTTAR KANNADA DISTRICT**

**MS. N.V. RAJESWARI+**

## **Introduction**

Various methods of family planning have been introduced and popularised since the inception of the family planning programme so that the acceptor couple can select a suitable contraceptive method of their choice for regulating the size of their family. The IUD was used on a large scale during the mid-sixties. However, its acceptance declined to a very low level because the provision of services was not backed by timely follow up care which was essential to the management of side effects associated with its use. During the sixties and seventies, vasectomy was the most accepted method. Particularly during the Emergency period, the number of vasectomies reached a peak, but declined thereafter, and the acceptance of tubectomy has been on the increase since then. In more recent times, laparoscopic tubectomy has gained in popularity and is increasingly replacing the conventional procedure.

A perceptible shift in the popularity of methods has become a regular feature of our family planning programme. The underlying reasons for such a shift may be the increased emphasis on a particular method; or the advantages or disadvantages of one particular method over others, or that the acceptors choose a method/s according to their convenience and its suitability, or it may be the result of the combined influence of all these factors.

## **Objectives**

In view of the above, it was felt that an analysis of family planning acceptors by their socio-demographic characteristics, attitudes and reactions may enable one to understand the type of people who prefer one particular method as opposed to another method. Such a study could provide some clues for programme planners to emphasize the method(s) that is(are) effective and preferred by most.

The present paper seeks to know the differentials in socio-economic and demographic characteristics of acceptors of one method namely, tubectomy; to understand the specific reasons for accepting one type of surgical procedure, namely laparoscopic, over the other, that is, the conventional, and

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to compare the side effects, if any, associated with these two procedures.

### Source of Data

The data for the study was drawn from a large-scale evaluation<sup>1</sup> conducted in Uttar Kannada District during 1985-86 by the Population Research Centre, Dharwad. The sample for the above-mentioned study consisted of 500 acceptors, of whom 340 were cases of tubectomy (the rest were IUD cases). The reference period was the fiscal years 1982-83; 1983-84 and 1984-85. Of the total of 340 cases, 219 were laparoscopic tubectomies and 121 were conventional tubectomies. The analysis that follows pertains to information collected from these 340 tubectomy acceptors residing in 17 villages of three primary health centres surveyed as part of a larger evaluation survey.<sup>2</sup>

### Results and Discussion

The proportions of laparoscopic and conventional tubectomy acceptors in Uttar Kannada were 64.4 per cent and 35.6 per cent respectively. This shows that laparoscopic tubectomy is popular in the study area.

The religious and caste composition of the acceptors of both the conventional and laparoscopic procedures indicated a higher proportion of the former among Christians and scheduled castes and scheduled tribes (Table 1). On the other hand, the majority of Muslims and Hindu Brahmins in the study area were found to prefer laparoscopic tubectomy.

TABLE 1

Distribution of acceptors by religion and caste

Religion and caste	Total female sterilisation acceptors	Proportion of laparoscopic acceptors to total
Brahmins	51	72.5
Lingayats and advanced Hindus	13	69.2
Other Hindus	71	67.6
Scheduled castes/Scheduled tribes	174	58.0
Muslims	28	82.1
Christians	3	33.3
Total	340	64.4

Data on educational status of the acceptors presented in Table 2 indicates that the level of education did not influence the choice of the procedure.

TABLE 2

**Distribution of acceptors and their spouses by education, occupation, and age**

	Tubectomy acceptors		Husbands of acceptors	
	Total	% Laparoscopic to total	Total	% Laparoscopic to total
<i>Education</i>				
Illiterate	240	65.4	140	63.6
Upto 4 years of schooling	55	60.0	117	66.7
5-18 years of schooling	45	64.4	83	62.7
Total	340	64.4	340	64.4
<i>Occupation</i>				
Cultivators	72	51.4	128	65.6
Agri labourers	130	78.5	123	73.2
Non-agri labourers	6	83.3	45	46.7
Trade/commerce and salaried	7	57.1	35	48.6
Not working	125	56.8	9	77.8
Total	340	64.4	340	64.4
<i>Age (years)</i>				
15-24	77	68.8	1	100.0
25-29	140	60.7	60	66.7
30-34	72	56.9	90	55.6
35+	51	78.4	189	67.7
Total	340	64.4	340	64.4

Table 2 also indicates that conventional tubectomy was accepted by many women who were engaged in cultivation, trade/commerce, salaried employment and who were not working. On the other hand, agricultural and non-agricultural labourers were in favour of laparoscopic tubectomy.

Another point to be noted here is that the proportion of working and non-working women among the laparoscopic tubectomy acceptors was 67.6 per cent and 32.4 per cent. The respective percentages among conventional

tubectomy acceptors were 55.4 per cent and 44.6 per cent. This may be the reason for the higher proportion of laparoscopic tubectomy acceptors among agricultural and non-agricultural labourers.

The acceptors of the two procedures belonged more or less to the same economic stratum, with laparoscopic tubectomy acceptors comprising approximately 64.4 per cent of the total acceptors in each of the four income groups into which they were distributed, namely, less than Rs. 3000, Rs. 3000 - 4999, Rs. 5000 - 14,999, and over Rs. 15,000. This implies that income did not influence the choice of the tubectomy procedure for which they opted.

As is also evident from Table 2, more than three-fifths of the total acceptors in all the age groups had undergone the laparoscopic procedure, with the highest proportion (78.4 per cent) among those aged 35 years and more. Among those who preferred the conventional tubectomy operation, those in the age group 30-34 years comprised the highest proportion (43.1 per cent).

An analysis of the laparoscopic tubectomy acceptors aged 35 and above by number of living children at the time of acceptance indicated that 10 per cent of the acceptors had three or less than three living children, another 20 per cent had four living children and 70 per cent had five or more living children (Table 3).

TABLE 3

Distribution of acceptors by parity and number of living children

Number of Children	Parity		Number of living children	
	Total tubectomy acceptors	% laparoscopic to total	Total tubectomy acceptors	% laparoscopic to total
1 or 1	1	0.0	5	80.0
2	44	79.5	58	81.0
3	74	68.9	86	61.6
4	94	58.5	94	57.4
5+	127	61.4	97	62.9
Total	340	64.4	340	64.4

The mean age at acceptance for the laparoscopic tubectomy acceptors was 29.3 years and for conventional tubectomy acceptors it was 28.3 years. Thus, the acceptors of female sterilisation tended to be in their late twenties. However, the conventional tubectomy acceptor was younger by one year than her laparoscopic counterpart. This observation compares favourably with the

findings of other studies conducted in India<sup>3,5</sup>.

Among conventional tubectomy acceptors, those with four living children constituted the highest proportion (42.6 per cent). In contrast to this, the proportion of laparoscopic tubectomy acceptors was as much as 80 per cent among those who had one or two living children.

A bivariate analysis of the laparoscopic tubectomy acceptors by age and number of living children at acceptance revealed that among those acceptors with two children, 39 per cent had accepted the terminal procedure at 25 years or less; 59 per cent had opted for it when they were between 25-34 years of age, and only 2 per cent had undergone the operation at 35 years or thereafter.

The acceptors of laparoscopic tubectomy had around four children living at the time of operation. Srivastav and Jejeebhoy<sup>6</sup> also observed in their study that laparoscopic tubectomy acceptors had around 3.8 living children on average. Further, the studies conducted by the Demographic and Evaluation Cell, Bangalore<sup>3,4</sup> also concluded that acceptors of both types of procedures in Karnataka had roughly four children at the time of operation. Choudary and Choudary<sup>7</sup> reported that the average number of living children per acceptor of laparoscopic tubectomy was 3.9 in Udaipur, Rajasthan, while studies of acceptors of the laparoscopic method conducted in Madhya Pradesh<sup>8</sup> and in Gujarat<sup>9</sup> observed almost the same number of living children on average (4.2 and 3.7 respectively) at the time of acceptance.

#### *Motivational Factors and Choice of Method*

Eighty three per cent of the acceptors of laparoscopic tubectomy and 86.0 per cent of those who underwent conventional tubectomy were observed to be self-motivated while the rest reported to have been motivated by family planning staff, friends, neighbours and relatives. This shows that the proportion of acceptors motivated by family planning staff was quite low. The proportion of self-motivated acceptors was almost the same among acceptors of both procedures. But when asked why they had selected the laparoscopic or the conventional procedure, 26.5 per cent of the acceptors of the laparoscopic procedure and 15.7 per cent of those who opted for conventional tubectomy stated that the advice of family planning personnel including the doctor influenced their decision to opt for the procedure. These findings suggest that a relatively higher proportion of those who accepted the laparoscopic procedure was influenced by the advice of family planning personnel as opposed to those who chose the conventional method. This inconsistency may either be due to the inability of the respondents to understand the meaning of the word motivation correctly or due to their unwillingness to reveal the source of motivation.

The major reasons given by the acceptors of the laparoscopic procedure

for preferring the operation were that the method required no hospitalisation, and was therefore, good and convenient (28.8 per cent) and the advice or recommendations of family planning staff (26.5 per cent), while the main reasons reported by the acceptors of conventional tubectomy for preferring the conventional procedure were its popularity (26.5 per cent) and the lower incidence of side effects (23.0 per cent) (Table 4). Many other researchers<sup>4-6 10</sup> have made similar observations as regards the reasons given by acceptors for adopting either laparoscopic or conventional tubectomy.

TABLE 4

**Distribution of acceptors by reasons for preferring  
the laparoscopic/conventional procedure**

Reasons	Laparoscopic tubectomy acceptors	Conventional tubectomy acceptors
It requires no hospitalisation, therefore the method is good and convenient	28.8	—
Advice of FP personnel including doctor	26.5	15.7
The method is popular	19.6	26.5
This method has no adverse side effects like other methods	10.5	23.1
Ignorant of other methods	7.3	12.4
Other acceptors advised this method only	5.0	16.5
Other reasons	2.3	5.8
Total	100.0 (219)	100.0 (121)

### *Complaints and Side Effects*

Table 5 presents the complaints registered by the respondents. The proportion of conventional tubectomy acceptors who experienced complaints or side-effects was less (43.0 per cent) as compared to laparoscopic tubectomy acceptors (55.7 per cent). Among the latter, more than half (56.6 per cent) complained of stomach pain, a burning sensation in the stomach, back-ache and waist pain. Only 38.5 per cent of the conventional tubectomy acceptors complained of these side effects.

Other complaints mentioned by both groups included heavy bleeding and white discharge, general weakness and debility, sepsis and pus formation. While disturbances of the menstrual cycle were reported only by a very small proportion (4.1 per cent) of the acceptors of laparoscopic tubectomy, more acceptors of conventional tubectomy (34.6 per cent) as compared to laparoscopic tubectomy (16.4 per cent) reported general weakness and debility.

As regards method failure, five acceptors (2.3 per cent), all from the laparoscopic tubectomy group, reported a pregnancy after the operation. Of these, two pregnancies were detected within two months of the operation; the women are likely to have conceived even prior to sterilisation. None of the conventional tubectomy acceptors reported a pregnancy following sterilisation.

TABLE 5

Distribution of acceptors by nature of post-acceptance complaints

Complaints	Laparoscopic tubectomy acceptors	Conventional tubectomy acceptors
Backache, waist pain, stomach pain, and burning sensation in the stomach	56.6	38.5
Bleeding and white discharge	18.0	17.3
General weakness and debility	16.4	34.6
Sepsis and pus formation	4.9	9.6
Disturbed menstrual cycle	4.1	—
Total	100.0 (219)	100.0 (121)
Proportion of acceptors with complaints	55.7	43.0
Proportion of acceptors with no complaints	44.3	57.0

Nearly 93.0 per cent of the laparoscopic and 91.0 per cent of conventional tubectomy acceptors reported to have received follow-up services from the health staff, and most of them (96 per cent) expressed their satisfaction of these services. No difference was observed between the acceptors of the two groups with respect to the quality of follow-up services received.

Information regarding previous family planning history of the acceptors indicated that 16.9 per cent of those who had undergone the laparoscopic operation were keen to regulate their fertility and had accepted other temporary methods prior to sterilisation. This proportion was less in the case of conventional tubectomy acceptors (6.6 per cent). Thus, temporary methods had been accepted prior to the adoption of the terminal method by a small proportion of the acceptors of both procedures, though this proportion was slightly higher in the case of the acceptors of laparoscopic tubectomy.

### Conclusion

The present study finds that the socio-economic characteristics of the acceptors of laparoscopic tubectomy and conventional tubectomy do not differ significantly. However, of the total female sterilisation acceptors, those who opted for the laparoscopic procedure were found to be more in number

among agricultural labourers and higher caste groups of Hindus. In contrast, more conventional tubectomy acceptors belonged to the scheduled castes and tribes and economically inactive groups.

There was no significant difference between the acceptors of both procedures with respect to number of living children at the time of acceptance. However, on average, the conventional tubectomy acceptor was younger by one year than her laparoscopic counterpart.

Laparoscopic sterilisation with minimum hospitalisation was preferred by the majority of the agricultural and non-agricultural labourers in Uttar Kannada district. This indicates that the demand for laparoscopy is bound to increase, and therefore may be given more attention by programme planners. However, the extent of post-operative complaints is quite substantial, and in order to minimise the side effects and failure rate of the laparoscopic method, the training of doctors, improvement of the quality of clinical facilities, and regular follow-up services are essential.

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# **PREGNANCY CARE PRACTICES IN RURAL RAJASTHAN**

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## **Introduction**

We belong to an ancient and vast country with a rich cultural heritage. Many civilisations have flourished and vanished here, but some of the ancient and primitive obstetric practices have survived, particularly among our rural folk.

Udaipur district in Rajasthan state has 3117 inhabited villages where 85 per cent of the district's population lives. The female literacy rate of the district is 10.7 per cent. Only 19.8 per cent of the villages are approachable by pucca roads and only 21 per cent are connected by bus and rail routes, while people living in the rest of the villages have to travel long distances to catch a train or bus. About 70 per cent of the villages do not have electricity, and only 34.5 per cent of the rural population has medical aid within the village according to the 1981 Census. It is not surprising therefore, that a large number of villages follow a primitive way of life, age-old social customs and antiquated child birth practices. Hence it was considered of interest to study the pregnancy care practices which are followed in this traditional setting.

## **Sample and Methodology**

The study was conducted in six villages of Rajnagar community development block of Udaipur district in Rajasthan state, during 1983-84. The villages, selected on a random basis were Sundercha, Mundol, Baman Tukda, Arwada, Rajyawas and Bagol. In each village, families were randomly selected on the basis of access of the Anganwadi worker or Auxiliary Nurse Midwife (ANM). A total of 23% who had delivered between 2 to 10 years ago were selected one from each family.

In each village, an individual survey was conducted by interviewing the respondents with the help of the Anganwadi worker or ANM or Sarpanch. Sufficient time, and privacy were given to each respondent, and the interviews conducted with a great deal of patience. Late evening hours after their return from the fields was found to be the most convenient time for conducting the interviews and was therefore utilised. Since the questions asked were private and personal, about 15 per cent of the respondents declined to participate in the study and were dropped.

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Along with general information, details of the age at marriage, age at menarche, age at first child birth, diagnosis of pregnancy, obstetric history, and the nature of antenatal care and nutrition were noted down on pretested proforma for the 200 respondents.

## Results and Discussion

### *Age at Marriage*

Marriage is important from two aspects. First, it is a social custom, and second, it grants the couple permission to procreate. The earlier the age at marriage with respect to sexual maturity, the earlier the first and subsequent child births and vice versa. The age at marriage of the respondents is shown in Table 1.

TABLE 1

Distribution of respondents by age at marriage

Age in years	No of respondents	%
Below 14	173	86.5
15-18	12	7.0
18-20	13	6.5
20 & above	2	1.0

About 86.5 per cent of the respondents had been married in their childhood or before attaining menarche. Only 7.5 per cent had been married at the age of 18 years or more, that is, after attaining the legal age for marriage.

### *Interval between Menarche and First Conception*

The period of three to five years after menarche is critical in the life of a woman because it is during this period that she achieves complete biological and psychological maturity. During this period, her genital organs and pelvic passage are in the process of growth. If a pregnancy occurs during this period, which is a physiological possibility on account of ovulation, it results in more sustained trauma and other complications of childbirth.

The respondents had attained menarche at the age of 13 to 15 years. More than half (54.5 per cent) of them had experienced the first childbirth within one to three years of menarche i.e. approximately between 15 to 17 years, while 38 per cent and 7.5 per cent had achieved motherhood 4-6, and 7-9 years after attaining menarche respectively. In the rural area studied, early marriage and early childbirth were advocated and practiced firstly for reasons of security, and secondly, because it is felt that the earlier the woman proves her fertility, the more acceptable she will be (as she is considered 'ripe' and suitable for childbirth soon after menarche).

### *Diagnosis of Pregnancy*

Diagnosis of pregnancy was usually done by the respondents themselves or sometimes by the elderly women of the household. Their diagnosis was based on certain commonly known signs and symptoms such as amenorrhoea (in the case of 65 per cent of the respondents); nausea and vomiting (26.5 per cent); changes in taste - food likes/dislikes (2 per cent); quickening (1.5 per cent), and foetal movement (5 per cent).

The age-old subjective self diagnosis was thus the rule. Modern methods of diagnosis do not seem to have penetrated these villages.

### *Special Care during Advanced Pregnancy*

Special care was understood by the respondents as advise for extra rest, and avoidance of heavy work or certain types of work such as not going to the fields, etc.

Only 67 respondents (35.5 per cent) had taken special care during advanced pregnancy; almost two-thirds (66.5 per cent) did not get any such care.

The main reasons for not taking extra care during advanced pregnancy were that household and field duties had per force to be attended to, rest was considered unnecessary, or that physical and manual work were believed to facilitate delivery. Most of the younger respondents followed the advise of the elderly women of the household with regard to taking extra rest. The practice of taking special care during advanced pregnancy is also mentioned in "Sushruta Samhita" which advises mothers to avoid physical strain, journeys, lifting of weights and sexual intercourse during the antenatal period.

### *Antenatal Care*

Periodic check-up to determine the progress of pregnancy, and maternal and foetal well being, as also advice regarding nutrition, haematinics, immunisation etc. are the primary health concerns of obstetrics. However, most of the respondents (82.5 per cent) had not received antenatal care of any type. They had no concept or awareness of it and believed that pregnancy is a natural process and will end naturally. Some of them had some idea of antenatal care but did not try to get any services as they were afraid of a hospital, or because they had to travel a long distance to reach the hospital, or due to the burden of household work which did not allow them free time to visit a hospital. In case of any complaint, the traditional birth attendant was called in. In the villages studied, domiciliary MCH services were not available.

One-fifth of the ladies who were comparatively young and had had a recent childbirth stated to have received some MCH care such as an occasional check-up at the Subcentre, tetanus immunisation, and iron/folic acid tablets, but the majority of these respondents expressed their dissatisfaction of the services.

*Special Diet during Pregnancy*

About three-fourths of the respondents (76 per cent) did not take any special food during pregnancy. Most (60 per cent) were not aware that they should and the rest did not take it because of poverty. The remaining (24 per cent) reported to have taken special food in the form of extra milk, ghee (animal milk fat), vegetables etc. during pregnancy according to the advice of the elder members of the household. Nutritious foods such as curds, bananas, lemon, tamarind, jaggery, groundnuts, papaya, and certain vegetables were not consumed on account of beliefs that they were "cold" or "hot", or were harmful to the baby, or because they might lead to difficult labour.

It is unfortunate that most of the nutritious food items are not available in rural areas, and those which are available and within the reach of rural women, are not consumed on account of wrong beliefs and fears.

*Preparations for Delivery and the Newborn*

Since delivery at home is the rule in the villages an attempt was made to find out if any specific preparations were made for the occasion. Most respondents (86 per cent) did make certain preparations as detailed in Table 2.

TABLE 2

## Preparation for delivery and for the newborn

	No. of respondents	%
Preparation		
Done	172	86.0
Not done	28	14.0
Type of water used		
Hot	140	70.0
Cold	28	14.0
Clothes or linen		
Unwashed old rags	148	74.0
Washed/Cleaned old rags	22	11.0
Site for Delivery		
Cleaned by brooming	124	62.0
Washed with water	25	12.5
Cleaned and smeared with clay	20	10.0

The floor on which the delivery was planned was cleaned with a broom (62 per cent). Unwashed old rags were kept ready (74 per cent) and provision for hot water (70 per cent) was made in the majority of the cases. Most of the respondents stated that whenever the labour pains started, they just swept a dark and isolated corner of the room.

No preparation of any sort was made by 14 per cent of the respondents. Hence childbirth in such circumstances seems comparable only with the birth-

process in animals and primitive man. A similar observation was made by Ghadimi' among the nomads of Iran.

The reason given by the respondents for not making any preparations was that they thought it unnecessary. In general, the concept of pregnancy care in a family was observed to depend upon the elderly woman of the household, who is usually the mother-in-law, and the practices followed seem to exist as a tradition. This shows that even today because of the absence of a primary health care delivery system in these villages, pregnancy care still exists in a primitive and traditional form.

To leave the mother and the baby entirely at the mercy of traditional and primitive practices in today's world of scientific and technological development, speaks of our indifference and insensitivity. Beneficial traditional practices must supplement modern primary health care, including maternal and child health care. One of the main causes of high maternal and infant mortality in our country is the lack of proper antenatal and intranatal care to the majority, particularly in the rural areas. Illiteracy, poverty, lack of awareness, poor socio-economic status, and poor rural development have also contributed to this. The rural mother, because of her illiteracy, lack of awareness and poverty, is unable to speak or defend herself and her foetus or newborn.

In the present study, as many as 90 per cent of the rural mothers had conceived before 18 years of age exposing themselves to the high risk of teenage pregnancy. The majority had diagnosed their own pregnancy since proper services were not available, 66.5 per cent did not have any type of special care even during advanced stages of pregnancy, and as many as 85 per cent had not received any antenatal care from any agency. Further, 76 per cent had not taken any special food during pregnancy because of poverty, wrong beliefs and ignorance; 74 per cent had used old, dirty unwashed rags during delivery, and most had delivered on the floor of a dusty, unclean, ill ventilated and unprepared corner of a room. Under such circumstances it is paradoxical to imagine a lowering of the maternal and infant mortality rates and the present high population growth rate. One of the main reasons for having many children in rural areas is the feeling of insecurity arising from poor infant survival. Unless and until each mother is given proper antenatal care along with nutrition and education and assured protection of her children by immunisation and nutrition, the rural masses will not accept the small family norm and rightly so. Poor infant survival has therefore led not only to an increased growth rate and overpopulation but has added to our poverty and lowered the quality of life in general. MCH care is the most vital as well as critical component of our health services and it should not be overlooked at any cost.

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# **SOME RESULTS ON FREQUENCY OF SEXUAL INTERCOURSE AMONG URBAN COUPLES**

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## **Introduction**

The frequency of sexual intercourse is one of the dominant factors which affects the probability of conception per menstrual cycle, termed as fecundability. Biologically, a recognisable conception takes place during a given menstrual cycle only if (i) the cycle is ovulatory, (ii) insemination occurs during the fertile period in the middle of the cycle, (iii) insemination during the fertile period leads to fertilisation, and (iv) fertilisation results in a recognisable conception. Fecundability, being the product of the probabilities of these four events, depends on coital frequency<sup>1</sup>. Analysing daily calendars showing the timing of intercourse and ovulation in a group of 241 non-contracepting British women of proven fertility, Barrett and Marshall<sup>2</sup>, have demonstrated a direct dependence of fecundability on the frequency of intercourse.

Within a society, considerable variation in mean coital frequency may be observed among different age groups. Further, there may be differences in mean coital frequencies of different societies accounting for some part of the variation in fertility. But, the moot question arises whether there is enough variation in mean coital frequency among socio-cultural groups to account for a significant fertility differential?

## **Objectives**

According to Davis and Blake, 'no reliable evidence confirms the assertion that mean coital frequency for comparable age groups varies from one society to another and "certainly none which indicates that this is a significant factor in inter-societal variations in fertility"'. A contrary and perhaps more common view of some eminent statesmen and demographers is that one of the major reasons behind the higher population growth of less developed countries is that most of the population being poor, can afford very little other recreation besides sex and, thus has a relatively high frequency of sexual intercourse.

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These two (still existent) prudent but perplexing and antagonistic assertions about the sociology of fertility call for investigations in order to arrive at definite conclusions. Therefore, reliable data on coital frequencies of a group or different groups of people may be quite useful in understanding its impact on fertility. The objective of the present study thus, is to report some results on the frequency of sexual intercourse among urban couples in Varanasi.

### **Data and Methodology**

The results of the study are based on the data collected in a survey entitled, "A study of fertility behaviour among urban couples", conducted under the auspices of the Department of Statistics, Banaras Hindu University (BHU) during May-June 1987. In addition to other questions, the schedule included a question about the average number of coital acts performed per month.

Recognising the very personal and confidential nature of the question and the level of literacy (almost 100 per cent), a special technique was adopted for the purpose of data collection. The means to safeguard the respondent's privacy was emphasised, and the respondent was fully assured of privacy during the interview so as to elicit reliable data. To camouflage the respondent's identity, neither the name nor the address of the respondent was mentioned anywhere on the schedule. Thereby, each respondent was provided a plain envelope of the same size and colour as the schedule. Further, every respondent was advised to just tick (not to write anything) the appropriate choice among the given multiple choices, as a response to a particular question. After ticking the appropriate choices, each respondent was requested to put the schedule in the given envelope, paste it, and put the pasted envelope inside a sealed box carried by the investigator. Thus, nobody could tell which envelope belonged to which respondent. In this way, an almost 100 per cent response rate was achieved and it is believed that the data obtained are quite reliable.

The study deals with the analysis of data collected from 229 elite urban couples of whom 104 couples belonged to the B.H.U. teaching community residing in the campus, and the rest belonged to the neighbouring locality of urban Varanasi which has a rather high socio-economic and educational status.

### **Results and Discussion**

Panel A of Table 1 gives the distribution of coital frequency per month according to the age-group of the wives, while Panel B presents the distribution by the wife's educational level.

Table 1 reveals that the average number of coital acts was almost the same for the age groups 20-24 and 25-29 indicating a plateau in the age-

TABLE 1

Number of coital acts per month by age and education of the wife

	Coital frequency per month									Total no of women	Average
	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15-19	20-26		
<b>A. Age of wife (years)</b>											
Below 20	0	0	2	0	1	0	1	0	0	4	8.5
20-24	0	1	5	9	9	4	4	3	4	39	10.95
25-29	2	6	2	5	4	4	5	6	4	38	10.97
30-34	5	8	4	6	8	6	2	1	1	41	7.61
35-39	4	8	10	6	7	1	1	0	0	37	6.04
40-44	9	11	10	3	3	0	0	1	0	37	4.61
45 and above	15	6	5	4	3	0	0	0	0	33	3.7
Total	35	40	38	33	35	15	13	11	9	229	7.48
<b>B. Education of wife</b>											
Upto Primary	5	2	3	3	2	1	0	0	0	16	5.01
Middle	5	2	3	6	2	0	1	0	0	19	5.58
High School	3	4	7	6	5	1	1	0	0	27	6.41
Intermediate	4	7	1	3	8	2	1	3	0	29	7.59
Graduate	7	13	7	4	5	3	5	2	3	49	7.62
Postgrad +	11	12	17	11	13	8	5	6	6	89	8.45
Total	35	40	38	33	35	15	13	11		229	6.77

range 20-29, and a steady decline with age thereafter.

The average number of sexual acts per month was 7.48. In a demographic survey conducted in Varanasi, the percentages of married women in age groups below 20, 20-24, 25-29, 30-34, 35-39, 40-44 and 45+ among all married women was found to be 16.66, 21.36, 18.19, 15.16, 12.79, 9.82 and 6.02 respectively. If we calculate the weighted mean coital frequency of the sample with the help of the above weights, it works out to 8.35. Mahadevan<sup>5</sup> obtained mean coital frequencies for three rural south Indian (Hindu) caste groups, namely Gounders, others and Harijans as 5.68, 5.36 and 6.24 respectively. The combined mean of these sample means worked out to 5.77 which is significantly less than the weighted mean for our sample. As most of the respondents in our sample were Hindus, a comparison of the mean coital frequency per week of rural (poor) Bengali Hindus<sup>6</sup> with that of urban couples in our sample can be made. Table 2 gives a numerical comparison.

The surveyed urban couples, in general, enjoyed a higher socio-economic status than the rural Bengali groups or rural south Indian caste groups. Table

TABLE 2

Mean coital frequency per week of selected samples by age of wife

	Age of wife (in years)						
	Below 20	20-24	25-29	30-34	35-39	40-44	45+
Rural Bengali Hindus*	1.39	1.9	1.8	1.1	0.7	0.2	0.3
Rural Bengali Sheikh Muslims*	1.54	2.4	2.4	1.8	1.4	1.0	0.4
Urban couples of Varanasi*	1.98	2.56	2.56	1.78	1.41	1.08	0.86

\* Source: Moni Nag (1983)

\*\* Mean coital frequency per week = 7/30 (Mean coital frequency per month)

2 reveals that coital frequency per week in the case of urban couples was significantly higher than in the case of rural Bengali Hindus. The combined mean of the mean coital frequencies per week for Bengali Hindus was 1.395 (and in terms of per month frequency, 5.98). Thus, three different groups (urban couples, rural south Indian caste groups and rural Bengali Hindus) of the same religion but demarcated by different socio-economic and educational levels indicated different monthly frequencies of coition viz. 8.35, 5.77 and 5.98 respectively. Perhaps, the higher socio-economic status of urban couples is one important reason for their higher mean coital frequency.

Interestingly, as seen in Table 2, the mean coital frequency per week of our sample, conforms with that observed for Bengali Sheikh Muslims. It may be mentioned here that the religious attitude towards sex of Sheikh Muslims and Urban Hindus is somewhat contradictory in the sense that the former sanctifies the pleasures of sex and the latter forbids overindulgence in it. Islam holds that the pleasures of the flesh are a god-given virtue and hence places less emphasis on moderation in sex<sup>4</sup>, whereas Hindu scriptures and philosophy emphasise moderation in sex because a man can supposedly gain not only physical but also moral strength by abstinence.

Thus, even with such striking differences in religious attitudes towards sex, both the groups exhibited almost equal coital frequencies. This may be attributed mainly to the higher socio-economic as well as educational status of the urban couples of Varanasi as compared to rural Bengali Sheikh Muslims. Further, a review of the figures presented in Table 2 also reveals a strikingly positive association between coital frequency and the educational level of the wives.

The findings of this study are not in agreement with the general belief expressed by Pearl<sup>7</sup>, and others that higher socio-economic status provides more avenues for recreation, more varied intellectual interests, and wider



outlets for nervous energy, all of which may tend towards less frequent sexual activity. Thus, it would not be right to say that poor people exhibit an overindulgence in sexual activities. In fact, higher education, the plinth of higher socio-economic status, may have a positive correlation with coital frequency. The urban educated elite, who have more privacy (due to the predominance of nuclear types of families among this group) and more sexual freedom (as education weakens traditional taboos and favours the use of contraceptives) may indulge more in sexual activity than their less educated and economically deprived rural counterparts.

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# **PROBLEMS RELATING TO FAMILY PLANNING : OBSERVATIONS FROM SUPERVISORY MEETINGS**

**DR. M. KABIR +**

**and**

**DR. M. MOSLEH UDDIN ++**

## **Introduction**

Bangladesh was among the first Asian countries to recognise the need to reduce the rate of population growth. For the last two decades this recognition has been an important element in the country's development planning.

The national family planning programme initiated grass-roots efforts to reach households with family planning messages and services. The main aim of the family planning programme has been to develop an infrastructure of family planning personnel and facilities that could make family planning information and services readily available to the general population. Since its introduction, the programme has been strengthened through increased allocation of resources, the expanded use of a multisectoral approach, and the use of mass media campaigns. A major assumption underlying the initiation of this intensive family planning programme is that there is a vast latent demand for birth control in Bangladesh. In addition, non-governmental organisations, such as the SOPIRET, are also active in the field of family planning all over Bangladesh, and a large number of registered NGOs are involved in mother and child health care and family planning activities.

However, despite a strong national commitment, the contraceptive prevalence rate remains at a relatively low level in Bangladesh. Many reasons have been cited for the failure of the national programme to achieve higher levels of contraceptive prevalence than have been achieved to date. These have included sparsely distributed service outlets, poor quality of services, infrequent supervision, and religious and culturally based opposition.

## **Objectives**

The purpose of this paper is to present the observations of the supervisory meetings of the Family Planning Organisers (FPOs) with the Family Planning Volunteers (FPVs). It is expected that with proper scrutiny and interpretation, the information, opinions and attitudes expressed by the family planning volunteers regarding field problems and the delivery of family planning services can yield useful insights into the problems faced by grassroots workers in promoting the programme.

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### **Research Approach, Study Design and Limitations**

In order to meet the objectives of the study, various types of data were collected by using different techniques. The family planning programme utilises a group discussion approach in which family planning volunteers under the guidance of the FPO, discuss the progress and problems of the family planning programme at periodical supervisory meetings. The purpose of observing the supervisory meetings was not to provide statistically generalisable quantitative data but rather to obtain qualitative information with a view to expose underlying attitudes, opinions, and behaviour patterns.

Ten family planning volunteers who had similar values relating to the topic under investigation were usually selected, the reason being that the discussion of sensitive topics is facilitated if the participants perceive one another as sharing the same perspective. The informal group situation and open-ended nature of the questions were intended to encourage the participants to comment on contraceptive behaviour patterns and to elaborate upon their opinions to an extent that is difficult in more formal individual interview situations, and since interaction among the participants in a group stimulates discussion. A check list was developed to observe the supervisory meetings, and an investigator was trained for the task of observing the supervisory meetings. Separate discussions with one or two participants and the clarification of some points with the supervisor, were also conducted to permit indepth exploration of the views of persons with differing perspectives. The discussions were usually noted down; the notes served as the basic input for the analysis.

As with any research method, the observations of the supervisory meeting-cum-discussion approach has a variety of limitations and potential problems. There is a risk that one or two participants may dominate the discussion. A group situation can also inhibit discussion if other members are perceived to be unsympathetic to a participant's views. Opinions disapproved by the community may also be less likely to be revealed in front of a group than in an individual interview unless they are perceived to be shared by others in the group. A skilled organiser or supervisor can reduce these problems by bringing all or most participants into the discussion and creating a permissive atmosphere in which a range of opinions can be expressed and any tendency to simply agree with others can be reduced.

In view of the qualitative nature of the data and the analysis, considerable subjective judgement was involved in interpreting what was discussed. Statements could not always be taken at face value and often required interpretation based on the context in which they were made or on information available to the researchers from other sources. Nevertheless, the analyst is considerably closer to what has actually been said and its context, than is the case when analysing survey responses. Distinguishing between spon-

taneous statements and those made only after probing, or noting the extent to which a particular topic or question generates discussion, can help the analyst in making judgments about the meaning of what is being said in ways that are not possible with the survey approach. Moreover, when the analyst is present at the session as an observer or note-taker, he can have an additional closeness to the data which should help in the analysis and interpretation.

Our study was designed to facilitate a comparison between the expected role of the supervisor (FPO) in a group meeting and his actual interaction with the family planning volunteers (FPVs) or the field level workers. In all 14 group meetings were observed in two upazilas, seven group meetings in each. The participants at each group meeting therefore were ten family planning volunteers, their supervisor and an observer. All the group meetings followed more or less the same discussion guidelines. In constructing the guidelines, the order of the questions asked was considered to be important. Since we wanted to determine the nature of the issues discussed, and the skill of the supervisor in providing solutions to the problems raised, more importance was given to matters relating to information, education and communication, the supply of contraceptives, side effects, record keeping, and religious and social constraints.

We present here a summary of the findings of the 14 group meetings. The presentation is organised around issues that we believe are fundamental for an understanding of motivation and IEC activities, and the problems faced in implementing the programme activities.

## **Findings**

### *General Views about the Meetings*

Of the 14 meetings, twelve were neither attended by all the ten family planning volunteers nor were held on schedule; all the family planning volunteers were present only at five meetings. It is surprising that although supervisory meetings were held, there were no registers for maintaining a record of the meetings, and at twelve meetings, there were no specific topics for discussion. It appeared that the supervisors (family planning organisers) were not adequately skilled to solve some of the problems raised by the field level workers (FPVs), suggesting thereby a lack of training of the FPOs. The discussion meetings also revealed that there was no discussion on IEC and in 12 meetings record keeping was not discussed. However, a good interaction between the supervisors and the workers was observed, which has possibly helped in improving family planning field activities. The discussion also brought out that contraceptive supplies were very regular and were available whenever there was a need.

### ***Problems Associated with FP Methods***

The meetings also identified a number of problems that are associated with the use of family planning methods, such as:

1. Most clients preferred to use the C-5 pill instead of Ovral) Fe. However, the inadequate supply of the C-5 pill had resulted in a misunderstanding between the workers and the clients. It was pointed out that if the delay in procuring supplies persisted, an increasing number of users would drop out; there was also reason to suspect that the clients would lose confidence in the workers.
2. There was a lack of cooperation between family welfare clinics, the workers of the SOPIRET, an NGO, and local hospital staff. As a result, the clients who were users of clinical methods did not receive proper treatment, care and medicines at the government health complexes and family welfare centres.
3. The government health workers claimed money for immunising pregnant mothers and infants. They did not want to visit the locality unless they were assured of payment for their services.
4. IUD clients did not get their compensation fee and the FP volunteers did not receive their referral fee from the government clinics.
5. Since the compensation fee for sterilisation acceptors was withdrawn, clients who had expressed a desire for undergoing sterilisation had subsequently refused to undergo the operation.

### ***Social and Religious Constraints***

In Bangladesh, several factors have been identified for the low use of contraception. Among these, socio-cultural barriers, religious constraints, and rumors about health problems associated with the use of contraception are predominant. This was corroborated by the FP volunteers who expressed their difficulty in working with certain households because of religious reasons. Some reported that religious leaders talked ill about them, and in certain areas the religious leaders were against permanent methods and created problems when they tried to motivate their clients. This suggests that the motivation and involvement of religious leaders would help in the successful implementation of the programme.

### ***Suggestions of FPVs and their Supervisors***

A number of suggestions were made during the course of the discussions. It is possible that many of them may not have a direct bearing on the programme as such, but it is expected that an indepth analysis of these suggestions would help in understanding and improving programme goals and objectives.

The need for more training was discussed very frequently by the FPs. This, according to them, would help them to update their knowledge and thereby provide better services to their clients. They also felt that further training would make them more self-confident and would enable them to create greater rapport and trust among their clients. They also identified different areas of training such as maternal and child health, health education and nutrition education, and the management of side effects.

The supervisors, on the other hand, suggested that further training of FPs should emphasise the management of side effects, and primary health care. Other suggestions offered by the FPs included the screening of documentary films in order to create public awareness within the community. Such shows, they felt, would motivate the general community, and particularly, the religious community. For greater community awareness and acceptability of the family planning programme, they also suggested the organisation of focus group discussions with community leaders, including religious leaders.

### **Discussion**

In any society, the impact of social and economic change on reproductive behaviour is mediated through its cultural setting. Bangladesh culture is not favourable to the limitation of family size and the adoption of birth control. Several barriers which are considered culture characteristic are present in Bangladesh. In addition, because of their low socio-economic status, women have no influence over birth control practices and family size. In such a cultural setting, modern tastes, attitudes and behaviour including changing reproductive patterns cannot take place easily.

According to the observations made during the supervisory meeting-cum-discussions by family planning field workers as well as from survey evidence, effective means of birth control were not widely practiced until recently. Organised efforts to provide contraception in the areas covered by this study met with immediate success largely because of the improvement in programme management by way of organised efforts to promote and provide contraception, thus facilitating the use of birth control methods. In our view, it is the interaction between the field workers and the supervisors that has resulted in this change in reproductive behaviour in the programme areas. There is little evidence at present to suggest that changes in socio-economic conditions have contributed to the change in reproductive behaviour. We feel that the availability and accessibility of family planning services has played an essential role in creating a demand in the programme areas under study. In these programme areas, access to modern and effective means of birth control is easier; travelling to the provider's house is also easier and takes usually ten to fifteen minutes to reach.

The group discussions also revealed certain management problems related to the timing and conduct of the monthly group discussion meetings, and maintenance of records. Since the records of the meetings were not maintained, the FPOs in many instances, were unable to remember the points that were discussed at the meetings, and therefore failed to give proper guidance and solutions to the problems raised by the workers. Moreover, a tremendous gap between the questions raised by the FPVs and the answers provided by the FPOs was observed. Again, the time allotted for the meetings was found to be short and in many instances, not enough to discuss and solve all the FPVs' problems. It was also noticed that most of the FPVs did not participate in the discussions; participation of all the workers should be encouraged. Field visit schedules of the FPOs were also not well maintained; these are necessary for making follow up visits by the FPOs themselves as well as for officials who propose to conduct field visits in these areas.

### **Conclusion**

This paper discusses the observations derived from the supervisory group meetings which are routine activities of the FPOs to improve programme performance. Various problems have been revealed from the observations. These include contraindications of the methods, side effects, social and religious constraints, allocation of meeting time, ability of the supervisors to solve the problems. The findings helped the programme managers to understand the weaknesses of the programme and take effective steps for the successful implementation of the programme. The study findings are expected to help others to understand field problems and offer solutions for the effective implementation of family planning programmes.

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# **ESTIMATION OF POTENTIAL FERTILITY RATES BY AGE-GROUP FOR KARNATAKA STATE**

**MR. R.L. PATIL\***

## **Introduction**

The impact of the family planning programme on fertility is usually evaluated in terms of the number of births averted. The basic parameter required for estimating this direct measure is potential fertility, defined as the fertility of the group in the absence of the programme whose acceptors they are. In other words, it is the fertility that the group would have experienced had they not accepted the contraceptive method that they did from the programme<sup>1</sup>. Potential fertility therefore means the fertility of acceptors alone. Viewed in this sense, it may be noted that potential fertility is not natural fertility which includes sterile women and women not cohabiting with their husbands. Thus, potential fertility which seeks to exclude these two categories of women and concentrates only on the fertility of acceptors is naturally higher than natural fertility.

## **Objectives**

The main objective of this paper is to estimate the potential fertility of the adopters of family planning methods in Karnataka state, for the Census years 1971 and 1981.

## **Data**

The main data required for the estimation of potential fertility are the age-specific marital fertility rates (ASMFRs) of the population for a calendar year, and the proportion of women using effective contraception by age corresponding to that calendar year. The 1971 ASMFRs and the proportion of women using effective contraception by age for Karnataka state has been taken from Srinivasan<sup>2</sup> and those for the year 1981 from Patil<sup>3</sup>.

## **Methodology**

The method given by Srinivasan<sup>4</sup> was applied for estimating the potential fertility of adopters. In essence, this consists of inflating the observed ASMFRs of the general population by a factor 'e' for each age group where  $e = 1/(1-u)$  and 'u' denotes the proportion of married women using effective

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contraception in that age group. It is assumed that the adopters of family planning are drawn from a proven fecundable group of females in the childbearing ages of 15 to 49 years

## Results

Table 1 presents the age-specific marital and potential fertility rates of females in Karnataka state.

TABLE 1

### Marital fertility and potential fertility of females in Karnataka

Age group of wife (years)	1971			1981			% couples protected	
	ASMFR (GP)	Potential fertility (PF)	Ratio ASMFR/PF	ASMFR (GP)	Potential fertility (PF)	Ratio ASMFR/PF	1971	1981
15-19	2580	259.5	0.6	2900	294.0	1.3	0.6	1.4
20-24	2980	306.1	2.7	3310	357.0	7.8	2.6	7.2
25-29	2890	313.8	8.5	2540	324.0	27.5	7.9	21.3
30-34	2080	244.1	17.3	1690	257.0	52.0	14.3	33.5
35-39	1610	195.9	21.7	1090	168.0	54.1	17.3	35.8
40-44	700	82.9	18.4	540	82.0	51.9	15.6	33.1
45-49	270	29.6	9.6	200	28.0	40.0	8.8	23.7
						Total	9.3	23.2
TMFR	6.5	7.2	10.7	6.1	7.6	24.6		

The table indicates that potential fertility which was 7.2 in 1971 has risen to 7.6 in 1981, a rise of over 5 per cent. The potential fertility level should have normally remained stable as it is not affected by any extraneous factors other than biological changes. The small rise that is evidenced here is due to a rise in the natural fertility of younger women in the 15-24 ages. For instance, in 1981 the ASMFR of females aged 15-19 and 20-24 registered a rise of 12.0 per cent and 11.0 per cent respectively over the 1971 rates. This is presumed to be due to improvement in fecundability as a result of modernisation<sup>1</sup>.

An examination of the ratio of potential fertility to total marital fertility rates (TMFR) of the general population reveals a rising trend in the difference between the two rates. In 1971, potential fertility was higher than the TMFR of the general population by 10.7 per cent while in 1981 this gap widened to 24.9 per cent. This is not unusual because marital fertility is bound to decline with increasing contraceptive prevalence rates as has happened between 1971 and 1981 (the contraceptive prevalence rate which was 9.3 per cent in 1971

increased to 23.2 per cent in 1981), while the potential fertility of acceptors is a more a stable phenomenon, and hence as marital fertility declines the difference between the TMFR of the general population and potential fertility shows a widening gap.

An important aspect of the study of the differentials between the level of potential fertility and TMFR of the general population is that of age-specific differentials. It may be seen that the age-specific differentials between the ASMFRs and potential fertility by age are smaller in the younger ages of 15-24, while the gap substantially widens beyond 30 years. This is because at young ages, sterility contributes to a minor part of the differences, the bulk of the observed differences are attributable to differential fecundity. At higher ages, sterility becomes overwhelmingly the most important factor and hence the differential between the ASMFRs of the general population and potential fertility of adopters are also wide. It may be seen from Table 1 that the differentials between ASMFRs and potential fertility by age in 1971 was less than 10 per cent upto age 29 while thereafter the gap sharply widens. A similar trend is observed for 1981 also.

The age-specific differentials are different at different ages and the significance also changes with age. The demographic impact of the family planning programme will continue to be marginal if wide differentials are observed in older ages. Therefore, for the programme to make a real dent on fertility, there should be a change in age patterns of acceptance in favour of young couples.

## Discussion

The problems of determining the fertility expectation of a group of acceptors has no agreed solution<sup>6</sup>. Several studies<sup>7,8</sup> have shown that the fertility level of family planning acceptors is higher than that of the general population. These studies have shown that a large measure of the genuinely higher fertility expectation of acceptors is derived from the exclusion from their ranks of women who are sterile. Since the observed TMFR of the general population in 1971 was 6.5, a 10 per cent higher potential fertility level of 7.2 for the same year is a reasonable estimate. In 1981 the level of potential fertility being 7.6 shows a slight increase due to a rise in natural fertility of younger women in the 15-24 age group. Thus the rise in potential fertility is attributable to the changing fecundity status of females in Karnataka. This aspect has been well documented. In the pioneering study of births averted, Isbister<sup>9</sup> assumed a 20 per cent higher fertility for acceptors than for the general population. In the light of these findings, our estimates for 1971 and 1981 appear to be reasonable. An important aspect which remains unresolved is that women who have previously used contraceptive methods, abortion or abstinence are also represented amongst acceptors. These women can have a lower than

average potential fertility. However, in Karnataka as all over the country, the emphasis is on sterilisation and the evaluation studies conducted by the Population Research Centres in the State have shown that prior practice of family planning is negligible. However, as induced abortions have been on the increase in the recent past, any future estimate of potential fertility is likely to be affected by this factor.

### Conclusion

The study of potential fertility refers to the fertility of adopters of family planning. Family planning acceptors are essentially drawn from a proven fecundable group and hence it is reasonable to expect that the level of potential fertility should be higher than the total marital fertility rate of the general population and that is precisely the outcome of the present analysis. It is hoped that the findings of this study will facilitate studies related to the evaluation of the family planning programme in Karnataka in so far as the study provides a much-needed parameter to estimate the number of births averted. However, as societies change, fertility norms also change and hence an initial estimate of a fertility schedule of married women cannot remain in currency for long periods. It is therefore desirable that age-specific marital fertility rates need to be estimated at regular intervals of five years before estimates of potential fertility can be obtained.

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# **POPULATION POLICY OF CHINA AND ITS IMPACT ON FAMILY SIZE AND STRUCTURE**

**MS. HAO CAILAN\***

## **Introduction**

China is an over-populated country. Its present population makes up about one-quarter of the world's total population, and occupies the top position in the world in regard to population size. China with its large size of population but with limited natural resources is bound to have numerous socio-economic problems. For controlling the excessive rate of growth of the population and for improving the quality of life, the Chinese government implemented population policies from time to time and launched a campaign "one couple one child". As a result, a great achievement has been made; the crude birth rate has dropped from 39.14 per thousand in 1964 to 21.09 per thousand in 1982; the natural growth rate has slowed down from 27.64 per thousand in 1964 to 14.49 per thousand in 1982; and the total fertility rate has declined from 6.18 in 1964 to 2.24 in 1980<sup>1</sup>. Similarly, a significant reduction was made in the infant mortality rate, from 70.9 per thousand in 1957 to 34.69 per thousand in 1981. Consequently, life expectancy increased from 47 years in 1950 to 67.9 years in 1981 - 66.4 years for males and 69.4 years for females<sup>2</sup>.

Further, the rapid decline in population growth has affected China's family size and structure. The number of households in China increased from 86.64 million in 1947 to 220.1 million in 1982, whereas the number of persons per family came down from 5.35 persons in 1947 to 4.43 persons in 1982<sup>3</sup>, and also on account of the same, the traditional extended family pattern started to break up into nuclear families. However, little seems to have been done to study this phenomenon. The present study was therefore undertaken with a view to bridge this gap.

## **Objectives**

The present paper has the following two objectives:

1. To study some of the problems associated with population growth, and to review different population policies in China implemented by the Government from time to time.
2. To study the impact of the current population policy on family size and

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structure in China

### **History of Population Growth in China**

Prior to the liberation of China, before 1949, the population was characterised by a high birth rate, high death rate and a low natural growth rate. During the period 1840-1949, the population grew from 412 million to 541.67 million (excluding Taiwan Province)<sup>4</sup>. The average crude birth rate, crude death rate and the infant mortality rate were 35, 25 and 200 per thousand respectively during this period, while life expectancy at birth was around 35 years<sup>1</sup>.

Since the formation of new China in 1949, the mortality rate, and infant mortality in particular, were reduced and life expectancy extended as a result of improved health conditions and high living standards. However, lack of adequate control on the birth rate led to an excessive increase in population. During this 30-year period (1949-1979), for 19 years the crude birth rate remained by and large, more than 20 per thousand. During the course of time, mortality dropped from 20 per thousand in 1949 to 6.21 per thousand in 1979 (see Graphs I and II). It is apparent that China's population experienced a population transition during this period. The population increased so rapidly that it doubled in only one-third of a century—542 million in 1949, but 1008 million in 1982 (Appendix Table 1).

### **Some Socio-economic Problems Caused by Rapid Population Growth**

Population pressures have become increasingly tangible in the areas of improvement of living standard, housing, education, transportation, public health and employment. Alarm has been expressed over a general inability to cope with the needs of a growing population. The arable land per capita has fallen from 2.71 mu\* in 1949 to 2.59 mu in 1957, 1.84 mu in 1970 and 1.54 mu in 1979<sup>1</sup>.

Though there has been a great increase in agricultural production, the food consumption has not met the desired goal. It was 576 jin\*\* per capita in 1952, and 586 jin in 1970, there being only a 10 jin increase during the 18-year period. As regards living space, the shortage of housing for the urban population is very serious. There was 4.5 square meters per capita in 1949, but only 3.6 square meters in 1978<sup>1</sup>. Because of the shortage of schools and teachers, more than one half of all young people cannot receive full secondary education.

### **Changes in Population Policy in China: A Review**

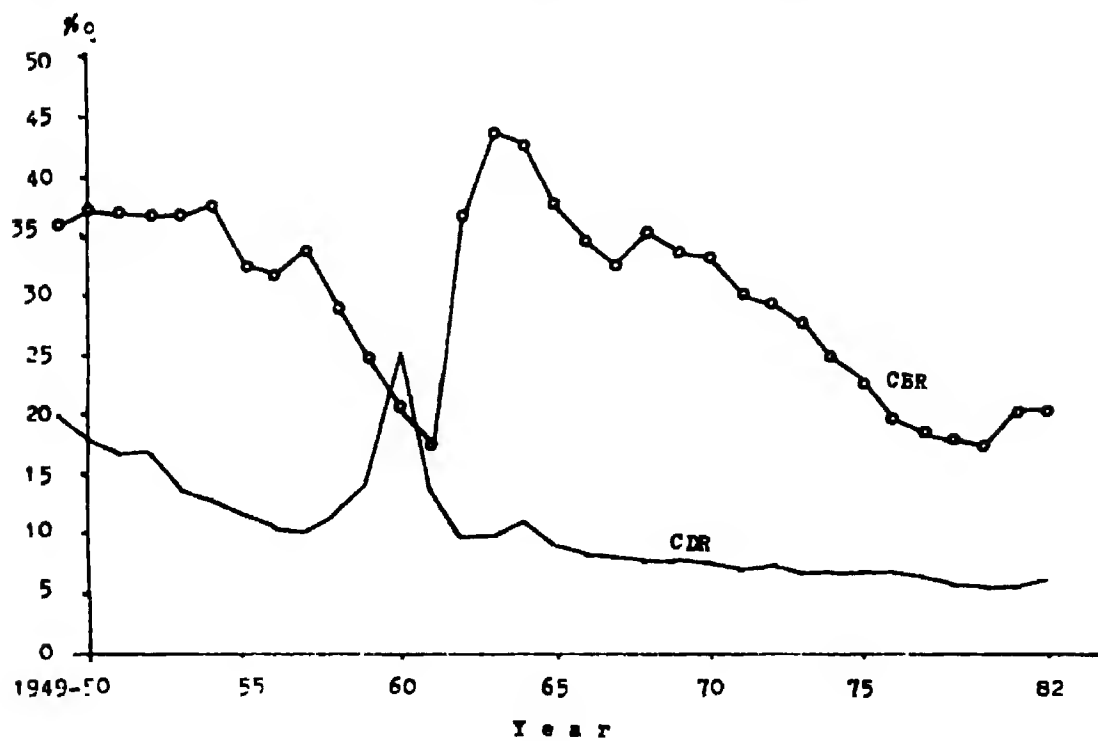
In order to control population growth, relax population pressure and

\* 1 mu = 0.164 acre

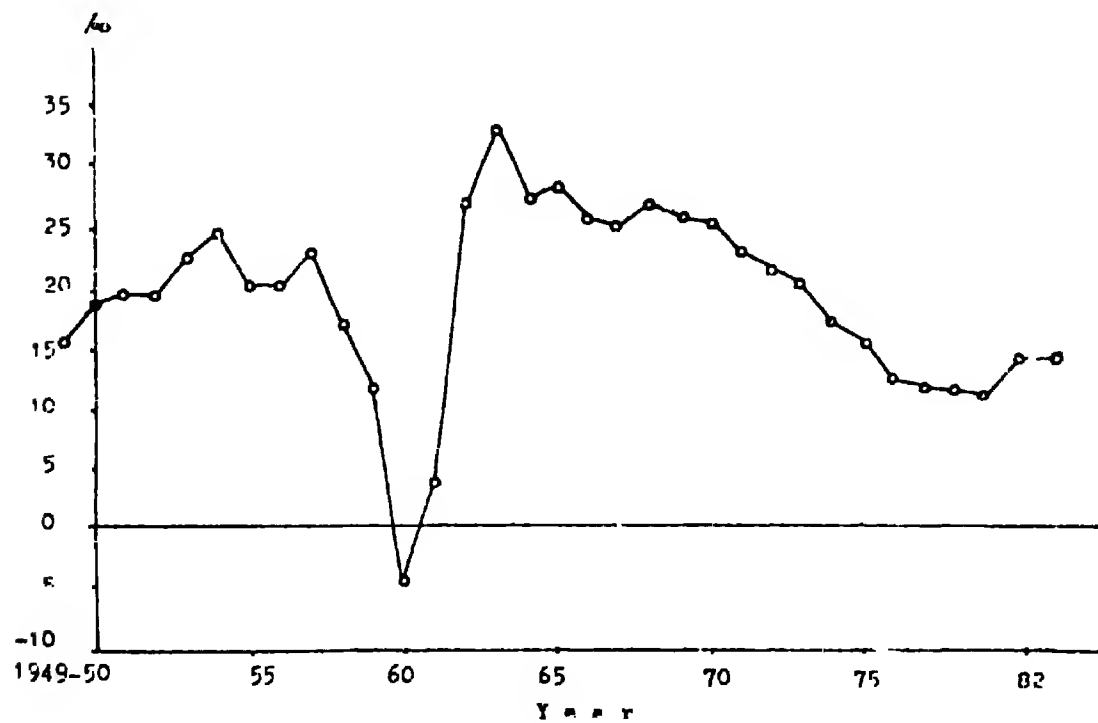
\*\* 1 Jin = 500 grams

## CHINA : POPULATION POLICY & FAMILY SIZE

**Graph 1 : Crude birth and death rates, China, 1949-1982**



**Graph 2 : Natural growth rate, China, 1949-1982**



accelerate economic development, the Chinese government has made several population policies since the foundation of New China. Prior to discussing these policies, it would be better to discuss population growth in China.

China's population growth shows two booms and two declines in the rate of growth, which has resulted in the "double hump" pattern. The "double hump" pattern is a result of natural disasters as well as the effect of population policies. China's population policies have undergone several changes which can be categorised into the following four stages.

*From a Pronatalist Policy to Birth Control (1949-1957)*

After the liberation, because of the improvement in living conditions and medical care, a sharp decline in mortality and rapid increase in natural growth rate were experienced. During 1950-1957, 165 million babies were born, averaging over 20.6 million per year. This was the first baby boom which lasted for eight years. The main reason for the rapid population growth during this period was the pronatalist policy. According to Mao Zedong', "The large size of China's population is extremely excellent. We will be able to cope with it by developing production no matter how many times the population size will increase." Therefore, the Chinese government did not propose any definite goals for population development. In addition, the strict government bans on sterilisation and induced abortion were a direct encouragement of more births. As a result, the natural growth rate increased from 16 per thousand in 1949 to 25 per thousand in 1954 (Table 1).

TABLE 1

Population growth in China, 1949-1957

Crude Rate (/1000)	1949	1950	1951	1952	1953	1954	1955	1956	1957
Birth rate	36	37	37	37	37	38	33	32	34
Death rate	20	18	17	17	14	13	12	11	11
Natural growth rate	16	19	20	20	23	25	21	21	23

Source Liu Hongkang, *A Handbook of Demography*, 1984, p. 179.

When the census of 1953 showed that the total size of China's population had surpassed 500 million, the Government began to pay attention to the problems and changed its pronatalist policy to an antinatalist policy, ratified a strict restriction of contraception to "no restriction in any case". Consequently, the Government started to manufacture contraceptives in 1955. Recognising the prevailing population situation in the country, there was a change in Mao's

ideology about population. He proclaimed that "human beings must control themselves and make up population increase in a planned way". But there was no concrete antinatalist policy; the natural growth rate remained at a high level.

### *Negative Growth Stage*

During this period, China experienced a great famine resulting in a drop in the birth rate and a sharp increase in the death rate. This period is well known as the natural disaster period. Table 2 presents the crude birth, death and natural growth rates during this period.

TABLE 2

Population growth in China, 1958-1961

Crude Rate (/1000)	1958	1959	1960	1961
Birth rate	29	25	21	18
Death rate	12	15	15	14
Natural growth rate	17	10	-4	4

Source: Liu Hongkang, *A Handbook of Demography*, 1984, p. 179.

### *The Stage of Out-of-control*

This was the second baby boom period, which lasted as long as ten years. During 1962-1970, 242 million babies were born, averaging 26 million per year. In 1963, the natural growth rate soared to 34 per thousand -- the highest record in China's population history (Table 3).

TABLE 3

Population growth in China, 1962-1971

Crude Rate (/1000)	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Birth rate	37	44	39	38	35	34	36	34	34	31
Death rate	10	10	11	10	9	8	8	8	8	7
Natural growth rate	27	34	28	28	26	26	28	26	26	24

Source: Liu Hongkang, *A Handbook of Demography*, 1984, p. 179.

The rapid population growth during this period may be due to the "leftist" population theory - the more people the better, and the "cultural revolution". Under the "leftist" population theory, the social and economic policies and measures implemented by the State and collectives favoured more births. For instance, in the rural people's commune, grain was apportioned by a



head count, and one more child meant an extra share of grain. In the cities, living space was allocated according to the number of people in each family, and subsidies were given to couples with financial difficulties arising from having many children. During the "cultural revolution", all levels of government were disturbed and stopped normal work. Nobody cared about family planning which had just begun in 1964; consequently the population grew uncontrolled. However, the Chinese government took some action to contain the population before and after the "cultural revolution". A State Family Planning Commission was set up in 1964, and work to publicise and promote family planning on a national scale was started.

#### *Vigorous Family Planning Stage (1972-1978)*

In 1974, Mao Zedong once again emphasised that "population growth must be controlled". As understanding of the population problem deepened, the Chinese government put forward the requirement of 'late, sparse and few' which referred to late marriage and late childbirth, as well as spacing of births (4-5 years' interval between the first and second child) and number of children (each couple should not have more than two children). Although the government did not set any age standards for late marriage, all provinces made their own rules - on an average, the minimum age at marriage should be 25 for males and 23 for females in the rural areas, whereas it should be 27 for men and 25 for women in the urban areas. Furthermore, that "the State advocates and encourages family planning" was included for the first time in the new constitution of 1978. A vigorous birth control campaign was launched in full swing, and family planning acceptors increased from 13.05 million in 1971 to 23.59 million in 1977.

#### **Current Population Policy (1976 to date)**

In 1979 the Chinese government embarked on a vast experiment - the creation of a nation of one-child families. At the Third Session of the Fifth National People's Congress held in 1980, the State Council put forward a general call for "one child per couple" and launched a crash programme calling on each couple, except those in minority nationality areas, to have a single child, so that the rate of population growth may be brought under control as soon as possible. The major aim was to strive to limit the population to a maximum of 1.2 billion by the end of this century. From then on, the "one couple one child" population policy began.

#### *The Objective of the Current Population Policy*

China's current population policy was formulated with the aims of vigorously developing production and raising the living standards of the people, to develop universal medical care and health services, to strengthen mother

and child care, to encourage late marriage and late child-bearing, to lower the death rate and to bring the birth rate under control. Precisely, the underlying aims of the current population policy are "to control the size of the population and to improve the quality of life"<sup>6</sup>.

### *The Need for a One-child Policy*

Prior to discussing the one-child policy, it would be meaningful to discuss some of the salient demographic characteristics and population problems of China, which compelled the Government to adopt this policy. China's population has a large base. During the past three decades (1949-1979), it witnessed two baby booms which lasted for 18 years. The country's population grew at a relatively high rate, a total of over 661 million people or an average of 22 million per year were born during this period. This implies that there were 22 million people entering the marriageable or childbearing age each year. China has a high population density and uneven population distribution. In 1979, its average population density was 101 per square kilometer, which was three times the world average. It ranged from a high of over 500 people per square kilometer to a low of only a few people per square kilometer. Over 90 per cent of the total population lived on 40 per cent of the land, while less than 10 per cent lived on 60 per cent of the land<sup>6</sup>. In addition, other factors such as the decreasing size of cultivable land due to the development of industries and transportation, the shortage of housing, problems of child care, education, medical care and social security had become serious and needed adequate measures to solve them.

All these factors forced the Government to implement the one-child policy. Even if only one child were to be born per couple beginning in 1980, it would still take 30 years, i.e. until 2010, to reach the goal of zero population growth in the whole country<sup>7</sup>.

### *The Implementation of the One-child Policy*

The Government has taken almost all possible steps to make the one-child family norm popular among the masses. Broadly speaking, two important measures have been used, one is publicity and education, the other is economic restriction. As regards publicity and education, the Chinese government utilises films, television, newspapers, magazines and broadcasts to emphasise the importance and benefits of the one-child norm. In addition, "family planning propaganda months" are observed and family planning propaganda teams have been organised to convince and motivate those who are not willing to accept family planning.

Apart from these direct ways of educating people for family planning, other indirect, efficient measures have also been adopted such as those for increasing women's status, providing job opportunities for women, strengthen-

ing mother and child health care, and providing better care to the old who have no children. In addition to economic restrictions, money penalties are imposed on couples who have multi-order births. On the other hand, many facilities are offered for couples who maintain the one-child family norm, for example, free kindergarten, free primary school, free medical care, and a monthly bonus for the child.

### **One-Child Family Norm: Observations**

Since the one-child policy was adopted by China, fertility has been on the decline. The achievements include a drastic reduction in the birth rate from 39.14 per thousand in 1964 to 21.09 per thousand in 1982, a corresponding decline in the natural growth rate from 27.64 to 14.49 per thousand during the same period, and a reduction in the total fertility rate from 6.18 in 1964 to 2.24 in 1980 (Appendix Table 2). The statistical evidence shows that for each woman of child-bearing age, about 3 children were avoided because of the success of the family planning programme. Further, the acceptance rate of one-child certificates\* increased. In 1979, it was 20.7 per cent and rose to 71.8 per cent in 1983<sup>8</sup>. In cities, one-child certificate acceptance is an universal requirement. After having one child, young couples usually accept family planning voluntarily. Therefore, the one-child certificate acceptance rate is much higher in urban areas.

From the above facts, it is evident that China has made great strides in controlling population growth. However, the one-child population policy could also have some negative effects, and these are discussed below.

The one-child policy may have some impact on the demographic, socio-cultural and psychological aspects of the population. With its effective implementation, it may alter the demographic composition of the population from one of young to one of an ageing population. Further, Confucian ideas such as "the more the sons, the more the blessings", and "men are superior to women", etc.<sup>9</sup>, would influence most couples to desire sons. Son preference is still a very serious issue in China, particularly in the rural areas. Moreover, only the sons can inherit the family property. Considering the prevailing son preference in Chinese society, one may expect that with the promotion of the one-child family norm, most couples would like to have a son, and this may pose problems of imbalance in the sex ratio of the population. As such, it is necessary to change the existing socio-cultural as well as economic values for son preference. Another negative effect of the one-child family could be its possible impact on the kinship structures of the society, that is, some people may have no brothers, some may have no sisters, similarly

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\* If a couple accepts a one-child certificate, it means that they have taken pledge not to have any more children.

some may have no uncles and aunts, and so on. And as such, the emotional ties imbibed through these relationships may no longer exist in these families in the years to come.

One-child families may also pose serious psychological problems for children and parents. The only child is inclined to be willful, arrogant, selfish, unsociable and eccentric, and the socialisation process of the child may not be on proper lines. Such children may turn out to be a problem for society. Besides, the parents and grandparents would expect the only child in the family to grow up into a perfect individual in all aspects. The expectations of the parents in relation to the child may be very high, but it is always not necessary that their expectations may come true. In such cases, the parents may suffer from psychological stress and strain, and the pampered child may also find it difficult to adjust in society.

### **Modifications in the Current Population Policy**

In the early 1980s, the responsibility system\* instituted in the rural areas of China, changed the collective production system to the private production system. It replaced the production team by the peasant's family as the unit of production and reinforced the economic value of children in the family. As a result, families without sons, found it difficult to cultivate private land. The peasants wanted more children, especially more sons. Consequently, the Chinese government modified the current population policy in 1982, the main change being that a second is allowed in certain special cases such as, if the first child is disabled because of non-genetic causes; if an only son marries an only daughter, etc. In 1984, the government issued a document to stress the one-child policy. The principle in general is that the policy is implemented more strictly in cities and less strictly in the countryside - two children are allowed in special cases, particularly in villages, and couples belonging to minority nationalities are permitted to have three births in special cases. Since then, two births per couple in the rural areas, and three births per couple in the minority nationality areas are popular.

### **Present Population Situation**

Since 1981, China's crude birth rate has fluctuated between 21 per thousand and 17.5 per thousand, resulting in a change in the natural growth rate (Table 4)

The table shows that the birth rate dropped from 20.91 per thousand in 1981 to 17.50 per thousand in 1984. However, in 1986, the birth rate rose to

\* The responsibility system means assigning plots of private land to peasants according to the number of heads in the rural family. The individual household is responsible for farming the land and handing in the grain according to the harvest and local plan.

**TABLE 4**  
**Population growth in China, 1981-1986**

Crude Rate (/1000)	1981	1982	1983	1984	1985	1986
Birth rate	20.91	21.09	18.62	17.5	17.8	20.77
Death rate	6.36	6.60	7.08	6.69	6.57	6.69
Natural growth rate	14.55	14.49	11.54	10.81	11.23	14.08

Source: Karen Hardee-Cleaveland and Judith Banister, "Fertility Policy and Implementation in China, 1986-1988", *Population and Development Review*, Vol. 14, No. 2, 1988, p. 247

20.77 per thousand population, which was close to the level of the birth rate obtained for 1981. The rate of natural increase rose from 11.23 per thousand in 1985 to 14.08 per thousand in 1986. Some of the probable reasons for the increase in the natural growth rate of the country's population may be a rise in the number of women reaching the prime reproductive ages as well as the increase in fertility. Some demographers suggest that China is facing the third baby boom—a direct consequence of the high birth rates from 1962 through the early 1970s; the large number of babies born during that period are entering the marriageable and childbearing ages. This has given rise to a successive birth peak.

Further, the relaxation of the one-child policy in keeping with the responsibility system introduced in the rural areas and minority nationality areas in special cases, has resulted in an increase in the crude birth rate, since a significantly large proportion of China's population lives in the rural areas (out of 1000 million nearly 800 million are peasants).

In May 1986, the Government issued new guidelines known as Document No. 13 in order to curb the rising birth rate. The main feature of the new document is to further strengthen family planning, to promote late marriages and late births, and to advocate only one child. A second child outside the birth plans and excessive births (i.e. third or higher order births) are prohibited.

### **A Brief Review of the Traditional Chinese Family**

China was originally a semi-feudal and semi-colonial country. The people have been affected deeply by the ideology of Confucius, especially with his idea "the more the sons, the more the blessings". This idea prevailed among the people for more than 2000 years and resulted in large families, i.e. extended and joint families became predominant in China before the liberation.

One of the major functions of the traditional extended family in China was its being a source of old age security. In the traditional family, the parents provided training and work and arranged the marriages of their children, while the children were expected to contribute to the family economy, and the sons

were also obliged to support the parents in their old age. In this regard, Professor Fei Xiaotong, a well-known sociologist, suggested a model and according to it, the older generation fosters the younger generation which, in turn, supports the older generation.

The prevalence of large extended families in old China may be attributed to the existence of feudal landed property and low productivity levels. More than 90 per cent of the peasant families lived on land either belonging to the feudal landlords or to themselves. Well-to-do Chinese families made every effort to safeguard the land and property they had accumulated over generations. Generally, the parents did not want the family land and property to be divided, as division of the family was connected with the division of wealth. The grandfather or the father was the head of the family, and parental authority held a strong, absolute position in the family. As long as he was alive, nobody dared to talk about the division of the family. Poor families owned very little land and scanty means of production, which were not divisible, constraining them to maintain extended families as well. There is a relationship among family size, land worked and kind of land tenure. Generally, nuclear families tend to be found among the tenants, and larger families (extended or joint families) among the owners and owner tenants<sup>10</sup>.

### Changes in Family Structure

Changes in the family structure for the years 1930 and 1982 have been presented in Table 5, which clearly shows that one generation and two generation families have increased apparently, while three generation families have decreased on a large scale, whereas families with four generations and above have almost disappeared.

TABLE 5

Percentage distribution of families by structure, 1930 and 1982

Type of family	1930	1982
One generation	2.52	13.74
Two generation	48.93	67.45
Three generation	40.19	17.16
Four generation	8.15	1.63
Five generation	0.19	-
Nuclear (including one-person family)	51.5	81.2
Extended (three or more generations)	48.5	18.8

Source: Maxia, "The analysis of Chinese Family Size and Family Structure" Population Research, No. 3, 1984, p.51

Table 5 also suggests that there has been a great change in family structure from 1930 to 1982, as nuclear families increased from 51.5 per cent in 1930 to 81.2 per cent 1982. On the other hand, extended families decreased from 48.5 per cent in 1930 to 18.8 per cent in 1982.

There are two main reasons behind this drastic change in family structure in China. The first may be the socio-economic changes which took place after the liberation, while the other could be the powerful birth control policy implemented since 1979.

### **Changes in Family Size**

The increasing popularity of the family planning programme and the declining trend in birth rates have also had an impact on family size. The 1982 census indicates that the smallest average size of family exists in Shanghai (3.6), followed by those in Beijing and Tianjin, their respective values being 3.7 and 3.9. On the contrary, the largest family size (5.2 persons) was found in Yunnan, followed by 5.1 persons in Guanzhong, Xizang, Gansu, Qinghai and Ningxia<sup>11</sup>. One of the possible reasons for this may be the fact that the one-child policy is strictly carried out in the cities, especially in the metropolitan areas, while in the remote and minority nationality areas such as the above-mentioned provinces and autonomous regions, two or three children are allowed, and therefore, the family size in these regions is larger as compared to the corresponding figures obtained from the cities.

From the above findings, one may anticipate that with the effective and vigorous implementation of the present population policy, nuclear families will show a rising trend and the size of the family may decline. However, it may be emphasised that because of the prevailing social and economic conditions in the country (shortage of houses, low wages for young people, etc.), some young married couples may stay with their parents temporarily till they manage to arrange a separate home for themselves. This may lead to a gradual decline in the extended family system. According to Qiu Liping<sup>12</sup>, "the nuclear family makes up the majority, the extended families are relatively stable and the joint families tend to disappear". Similarly Zeng Yi<sup>13</sup> opined that "the average size of the Chinese family is much smaller than it was before the formation of the People's Republic in 1949. The nuclear family has become the dominant family norm". Further, he states that "two prospects are usually described. Chinese family size will continue to fall and the proportion of nuclear families will continue to increase."

### **Summary and Conclusion**

The present paper aims to review the population policy implemented in China from time to time for the purpose of bringing about a reduction in the size of the country's population, and to improve the social and economic

conditions of the people. Also, an attempt has been made to discuss the merits and demerits of the existing one-child family norm in China, and its impact on size and structure of families.

China's one-child policy has been implemented for the past ten years, and remarkable changes have resulted demographically as well as in the socio-economic characteristics of the population. However, there could be some negative effect of the current population policy, for instance, it may lead to an imbalance in the sex ratio, ageing of population, or may weaken the kinship organisation of the family. In addition, children and parents may face social and psychological problems in the years to come.

So far as the impact of the one-child population policy on family size and structure is concerned, the paper has shown that the traditional extended family system in China is gradually degenerating and more and more nuclear family households are coming up; obviously family size is also reducing. Further, the number of households in China have increased drastically, whereas the number of persons per family has reduced. This suggests that the current one-child population policy has influenced family structure in China.

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## APPENDIX

APPENDIX TABLE 1

Crude birth rate, crude death rate and natural growth in China, 1949-1982

Year	CBR	CDR	NGR	Year	CBR	CDR	NGR
1949	36.00	20.00	16.00	1965	38.06	9.55	28.51
1950	37.00	18.00	19.00	1966	35.21	8.87	26.34
1951	37.00	17.00	20.00	1967	34.12	8.47	25.65
1952	37.00	17.00	20.00	1968	35.75	8.25	27.50
1953	37.00	14.00	23.00	1969	34.75	8.06	26.19
1954	37.97	13.18	24.79	1970	33.59	7.64	25.95
1955	32.60	12.28	30.32	1971	30.74	7.34	23.40
1956	31.90	11.40	20.50	1972	29.92	7.65	22.27
1957	34.00	10.80	23.20	1973	28.07	7.08	20.99
1958	29.22	11.98	17.24	1974	24.95	7.38	17.51
1959	24.78	14.50	10.28	1975	23.13	7.36	15.77
1960	20.86	25.43	-4.57	1976	20.10	7.29	12.81
1961	18.13	14.38	3.75	1977	19.03	6.91	12.12
1962	37.22	10.08	27.14	1978	18.34	6.29	12.05
1963	43.60	10.10	33.50	1979	17.90	6.20	11.70
1964	39.34	11.56	27.78	1981	20.91	6.36	14.55
				1982	21.09	6.60	14.49

Source: Liu Hongkang, *A Handbook of Demography*, Chengdu, 1984, pp 179-180 (in Chinese)

APPENDIX TABLE 2

Total fertility rate in rural and urban areas of China, 1950-1981

Year	Total	Rural	Urban	Year	Total	Rural	Urban
1950	5.81	5.96	5.00	1966	6.26	6.96	3.10
1951	5.70	5.90	4.72	1967	5.31	5.85	2.91
1952	6.47	6.67	5.52	1968	6.45	7.03	3.87
1953	6.05	6.18	5.40	1969	5.72	6.26	3.30
1954	6.28	6.39	5.73	1970	5.81	6.38	3.27
1955	6.26	6.39	5.67	1971	5.44	6.01	2.88
1956	5.85	5.97	5.33	1972	4.98	5.50	2.64
1957	6.41	6.50	5.94	1973	4.54	5.01	2.39
1958	5.68	5.78	5.25	1974	4.17	4.64	1.98
1959	4.30	4.32	4.17	1975	3.57	3.95	1.78
1960	4.02	4.00	4.06	1976	3.24	3.58	1.61
1961	3.29	3.35	2.98	1977	2.84	3.12	1.57
1962	6.02	6.30	4.79	1978	2.72	2.97	1.55
1963	7.50	7.78	6.21	1979	2.75	3.05	1.37
1964	6.18	6.57	4.40	1980	2.24	2.48	1.15
1965	6.08	6.60	3.75	1981	2.63	2.91	1.39

Source: Liu Hongkang, A Handbook of Demography, Chengdu, 1984, p.180 (in Chinese)

# **DETERMINANTS OF DESIRED FAMILY SIZE IN RURAL BANGLADESH : A TWO-STAGE ANALYSIS**

**DR. BASHIR AHMED\***

## **Introduction**

Information on desired family size is generally used for developing family-building models and explaining the connection between fertility preferences and contraceptive use.<sup>1</sup> Because of its importance, some 700 surveys around the world have included questions about desired family size<sup>6</sup>. The Core Questionnaire of the World Fertility Survey recommended the following question on desired family size: "If you could choose exactly the number of children to have in your whole life, how many would that be?" The answer to this question is also known as "fertility preferences" and "demand for children", all indicating the same notion of fertility, that is, a personal choice for family size. The question was adopted almost invariably by the developing countries including Bangladesh, which participated in the World Fertility Survey.

An analytical framework developed by the Panel on Fertility Determinants<sup>7</sup> assumes that most couples actually formulate desires about family size. Results from the World Fertility Survey indicate, however, that substantial proportions of women gave non-numeric responses to the desired family size question<sup>8</sup>. In that survey, the proportion of non-numeric responses was about 30 per cent in Bangladesh, 10 per cent in Ghana, 26 per cent in Ivory Coast, 19 per cent in Kenya, 32 per cent in Nigeria, and 44 per cent in Yemen.

Jensen<sup>9</sup> showed that any analysis based only on numeric responses would provide biased results. His approach assumes that non-numeric responses are randomly distributed over family size desires. In other words, women who do not express numeric desires do in fact have preferences about their family size.

McCarthy and Oni<sup>10</sup> questioned the validity of Jensen's assumption. According to them, women who do not express numerical fertility desires are at an earlier stage in the transition from pre-modern to modern fertility. In their words, "women who do not express numerical desires in fact genuinely do not consider family size to be an issue of personal choice or preference, that they are, in fact, fatalistic about the number of children they will have." They suggested a two-stage analysis of desired family size: the first stage

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considering factors associated with a woman's formulation of numeric or non-numeric family size goals, and the second stage examining factors that explain the particular numbers chosen by different women. Taken together, the two stages provide a comprehensive analysis of desired family size.

This paper examines the determinants of desired family size in rural Bangladesh, following the two-stage analysis suggested by McCarthy and Oni.<sup>8</sup> It gives us an understanding of the rationale for wanting a large family size, and why the proportion of non-numeric answers is very high in Bangladesh.

## **Methodology**

### *Data Source*

The data in this study come from the World Fertility Survey in Bangladesh.<sup>10</sup> In the survey, the question on desired family size was asked to a national sample of 6,513 ever married women aged 10-49. The present analysis is, however, restricted to currently married, once married, rural women. The restriction to currently married women was necessary because the desired family size stated by them is more likely to be a goal towards which their reproductive behaviour is directed. The restriction to rural women was necessary because information pertaining to community-level explanatory variables was collected only for rural areas. Thus, the analysis is based on 3,405 currently married, once married women who gave numeric or fatalistic answers, and 2,382 currently married, once married women who gave only numeric answers.

### *Explanatory Variables*

Both individual-level and community-level variables were selected as determinants of desired family size. Taking each set separately, the choice of the variables and their hypothesised effects on desired family size have been discussed.

### *Individual-level Variables*

The individual-level explanatory variables considered here are wife's age, number of living children, husband's occupation, husband's education, wife's education, wife's work experience, and religion. These variables are indirect measures of the five general categories of variables - the costs and benefits of children, opportunity costs of childbearing, tastes and personal preferences, income and wealth, and childbearing -- that have been listed by Lee and Bulatao<sup>11</sup> in their comprehensive review of the determinants of desired family size. The wife's education and her work experience, for example, are measures of the opportunity costs of childbearing. The usual argument is that higher

education and work experience raise the wife's potential earnings and hence the value of her time, lowering the demand for children. Women with higher education and work experience are also more likely to discuss their family size goals with their husbands. It is expected that such women are more likely to express numerical family size desires and prefer smaller families.

The husband's education is usually considered a proxy for a couple's income and wealth. The direction of the effect of income on the demand for children depends on its "income" and "taste" effects; it is positive if the "income" effect dominates over "taste" effect and negative if the reverse is true. It can be expected that the husband's education will positively affect numerical family size desires. The husband's occupation, on the other hand, indicates the demand for labour including child labour. Bangladesh is primarily an agricultural country where family farms are mostly labour-intensive. Because the employment of one's own adolescent children in farming involves no direct payments, it is expected that women with husbands engaged in farming will want more children than those with husbands engaged in non-agricultural occupations.

The intent behind the question on desired family size is that a woman will state her personal preference which is independent of the number of children she actually has. However, it has been claimed that child bearing itself also influences family size desires<sup>12-14</sup>. Thus, the variable "number of living children" was included in the demand equation as an independent variable. It was not possible to get measures of tastes for children from the survey data. However, since tastes are likely to vary with age and religion, the wife's age and religion have been included in the demand equation as control variables.

#### *Community-level Variables*

There is a growing recognition that the community or social milieu in which individuals live may affect their reproductive intention or behaviour<sup>15</sup>. The community-level explanatory variables used are the presence of cooperatives, type of rice planting, distance from family planning clinics, and occurrence of natural disasters. Some of the major objectives of community-level cooperatives are to make available to peasants irrigation facilities, agricultural inputs and credit, and to protect peasants against natural disasters, market fluctuations, and the exploitative demands of money lenders. To the extent that cooperatives operate effectively, we can expect that their presence will negatively affect the demand for children. Multiple planting of rice may assure higher food production and greater self-sufficiency and hence less dependence on children. Thus the effect of the variable "type of rice planting" can be expected to be negative.

It is now widely recognised that access to family planning clinics has

an independent effect on contraceptive use over and above the effect of socioeconomic development. Family planning workers are trained not only to provide contraceptive supplies but also to motivate clients about small family size norms. Thus it can be expected that women with greater access (shorter distance) to family planning clinics will express numerical family size desires and prefer smaller families.

The last, but not the least, community-level explanatory variable is the occurrence of natural disasters such as floods, cyclones, famine and drought. Natural disasters occur from time to time in Bangladesh, damaging crops and shelters and sometimes taking thousands of lives. When parents are hard-hit by disasters, they seek both economic and emotional support from their grown-up children. It is hypothesised that women exposed to greater environmental risks will be more fatalistic and want larger families

### *Analytic Techniques*

For our purpose, two types of multivariate analyses are appropriate: logit analysis and multiple linear regression analysis. Logit analysis has been used in the first stage, where the likelihood of expressing numeric or non-numeric responses to questions on desired family size have been examined, while multiple regressions have been used in the second stage, where the actual desired family size of those women who expressed numeric desires have been examined

### **Results**

Table 1 presents the distribution of women by selected characteristics and by whether or not they gave numeric responses to the desired family size question

The findings indicate strong associations between individual-level explanatory variables and the likelihood of providing non-numeric responses. Older women, women with larger families, women with no education, women with no work experience, and Muslim women are much more likely to provide non-numeric family size desires. Community-level variables seem to make little difference in the percentages of women giving numeric and non-numeric responses

To further examine the effects of the variables on the probability of giving numeric responses, logit regressions were run and the coefficients are given in Table 2.

Among the individual level variables, religion had the largest negative effect on the log odds of giving numeric responses. It is possible that many women had difficulty in comprehending the question on desired family size. However, some women gave fatalistic answers even after probing<sup>16</sup>. This perhaps suggests that there is an age-old association between

TABLE 1

Percentage distribution of numeric versus non-numeric responses by  
selected characteristics of women, rural Bangladesh, 1976

Selected characteristics	Numeric responses	Non-numeric responses	Total cases
<b>Total</b>	<b>2382</b>	<b>1023</b>	<b>3405</b>
<i>Individual characteristics</i>			
<i>Wife's age (years)</i>			
10-19	70.3	29.7	817
20-29	72.2	27.8	1369
30-39	70.5	29.5	733
40-49	62.3	37.7	486
<i>Living children</i>			
0-2	72.2	27.8	1606
3-4	70.9	29.1	866
5-6	67.1	32.9	598
7+	62.1	37.9	335
<i>Husband's occupation</i>			
Farming	69.6	30.4	2117
Non-farming	70.5	29.5	1288
<i>Husband's education</i>			
No schooling	67.5	32.5	1828
Primary	68.7	31.3	840
Secondary or more	77.5	22.5	737
<i>Wife's education</i>			
No schooling	67.2	32.8	2581
Primary	76.5	23.5	684
Secondary or more	89.3	10.7	140
<i>Wife's work experience</i>			
Never worked	69.3	30.7	3091
Ever worked	76.4	23.6	314
<i>Religion</i>			
Muslim	66.9	33.1	2757
Other	83.0	17.0	648
<i>Community characteristics</i>			
Cooperatives Present	70.8	29.2	1119
Cooperatives Absent	69.6	30.4	2286
<i>Type of rice planting</i>			
Single or none	70.4	29.6	588
Multiple	69.9	30.1	2817
<i>Distance to FP clinics</i>			
0-4 miles	69.5	30.5	1251
5+ miles	70.2	29.8	2154
<i>Occurrence of disasters since 1970</i>			
Never occurred	74.6	25.4	346
Ever occurred	69.4	30.6	3059

fatalism and Muslim religion. Wife's education and wife's work experience exhibited the second and third largest effects, respectively, on the log odds of giving numeric responses. As expected, their effects were positive and statistically significant. This perhaps indicates that greater access to formal education and work outside the home may counteract the effect of deeply ingrained fatalism in the society. The inclusion of community-level variables did not alter the effects of the individual-level variables (see Model B in Table 2). Also, none of the community-level variables showed a statistically significant effect, suggesting that individual characteristics are mostly responsible for numeric or non-numeric responses.

TABLE 2

**Logit regressions of numeric versus non-numeric responses to the question on desired family size, rural Bangladesh, 1976**

Explanatory Variable	Model A	Model B
<i>Individual-level Variables</i>		
Wife's age (single years)	-0.0097 (0.0060)	-0.0096 (0.0060)
Number of living children	-0.019 (0.023)	-0.020 (0.023)
Husband's occupation 1=farming, 0=non-farming)	0.068 (0.080)	0.062 (0.080)
Husband's education (1=attended primary level/higher 0=none)	0.045 (0.084)	0.041 (0.084)
Wife's education (1=attended primary level/higher, 0=none)	0.561* (0.105)	0.562* (0.105)
Wife's work experience (1=some 0=none)	0.442* (0.142)	0.435* (0.142)
Religion (1=Muslim 0=others)	0.879 (0.113)	0.879* (0.115)
<i>Community-level Variables</i>		
Cooperatives (1=present, 0=absent)		0.118 (0.082)
Type of rice planting (1=multiple, 0=single or none)		-0.0089 (0.104)
Distance to FP clinics (1=0-4 miles, 0=5 or 5+ miles)		0.029 (0.081)
Natural disasters (1=ever occurred since 1970, 0=never occurred since 1970)		-0.118 (0.138)
Constant	1.685 (0.180)	1.777 (0.230)
2 log likelihood ratio	40.31	40.28
Degrees of freedom	3397	3393

\*Significant at the 0.01 level

Figures in brackets denote Standard Errors



Table 3 presents the multiple regression coefficients for desired family size.

TABLE 3

Multiple regressions of number of children desired, rural Bangladesh, 1976

Explanatory Variable	Model A	Model B
<i>Individual-level Variables</i>		
Wife's age (single years)	-0.0091 (0.0062)	-0.011* (0.0062)
Number of living children	0.289* (0.024)	0.292* (0.024)
Husband's occupation (1=farming, 0=non-farming)	0.066 (0.080)	0.071 (0.080)
Husband's education (1=attended primary level/higher, 0=none)	-0.109 (0.085)	-0.105 (0.085)
Wife's education (1=attended primary level/higher, 0=none)	0.175* (0.096)	0.183 (0.095)
Wife's work experience (1=some, 0=none)	-0.347* (0.129)	0.352* (0.128)
Religion (1=Muslim, 0=other)	0.389* (0.092)	0.349* (0.094)
<i>Community-level Variables</i>		
Cooperatives (1=present, 0=absent)		0.042 (0.082)
Type of rice planting (1=multiple, 0=single or none)		0.313* (0.104)
Distance to FP clinic (1=0-4 miles, 0=5 or 5+ miles)		-0.341* (0.082)
Natural disasters (1=ever occurred since 190, 0=never occurred since 1970)		0.440* (0.129)
Constant	3.322 (0.113)	3.360 (0.219)
R-Square (adjusted)	0.113	0.123
F value	44.270	31.496

\* Significant at the 0.10 level

\*\* Significant at the 0.01 level

Sample size = 2,382

It is interesting to note that all the individual-level variables except wife's age show the expected effects on desired family size. Thus, women with husbands engaged in farming, no matter whether they own cultivable land, wanted more children than those with husbands engaged in non-agricultural occupations. The negative effect of husband's education is probably indicative of the taste effect on the demand for children; it is not statistically significant because so few men have ever gone for higher education. The negative and statistically significant effects of wife's education and

wife's work experience are probably indicative of the price effect on the demand for children. Finally, the positive effect of Muslim religion may be due to fatalism or tastes for a higher number of children.

The three community-level variables that affected desired family size significantly were rice planting, distance to family planning clinics, and occurrence of natural disasters. The effect of multiple rice planting is negative perhaps because of greater sufficiency in food production. The negative effect of access to family planning clinics (measured by distance) supports the government propaganda of reducing family size. The occurrence of natural disasters had the largest positive effect on the demand for children. It is an important finding because when parents are hard-hit by devastating cyclones or by crop failure and shortage of food supplies due to flood and drought, they seek both economic and emotional support from their grown-up children, especially sons.

### Discussion and Conclusions

This study has examined the determinants of desired family size in rural Bangladesh. The determinants were examined within the context of both individual-level and community-level variables. The analysis was carried out in two steps, first for numeric versus non-numeric responses, and then the desired family size of those women who gave numeric responses. What can be learned from this analysis?

In rural Bangladesh, non-numeric responses are more likely to be expected from older women, women with larger families, women with no education, women with no work experience, and Muslim women. Transcripts of the tape recorded interviews of Bangladeshi women indicate that the interviewers seldom deviated from the correct wording of the question on desired family size<sup>10</sup>. Yet, many respondents felt their ultimate number of offspring was up to God and not a matter of personal choice. This conforms to the assumption made by McCarthy and Oni<sup>8</sup> that women who do not express numeric fertility desires are at an earlier stage in the transition from pre-modern to modern fertility.

It may be mentioned that no information was collected from the husbands about their desired family size, so we do not really know if the desired family size or fatalistic answers given by a wife represented that of the couple or the wife. In future surveys, greater efforts should be made to clarify the meaning of desired family size to respondents, and attention should be given to collecting information pertaining to desired family size of the couple of the household.

Women's education and work outside the home have negative effects on the probability of giving fatalistic answers or the demand for children. It is possible that women with higher levels of education and those employed in

modern occupations are more materialistic and have higher opportunity costs. However, education is not universal in Bangladesh. Even those who attend primary schools find it economically difficult to go on for secondary or higher education. Particularly in the rural areas, most of the people are poor and educational opportunities are at a minimum. Because of low educational levels and the lack of employment opportunities outside the home, women are destined to play the traditional roles of wife and mother. The demand for children in such a society will probably remain high until the status of women is improved.

Since Bangladesh is predominantly an agricultural country and family enterprises are mostly labour-intensive, the higher demand for children among farmers may originate from the higher demand for child labour. Even in this agricultural setting, the demand for children would be less if the staple food rice can be produced several times a year. Although the exact reasons are not known, it can be assumed that the multiple planting of rice assures higher food production, greater self-sufficiency and hence less dependence on children. Multiple rice planting, on the other hand, is dependent mainly on greater irrigation facilities, modern agricultural inputs and availability of credits. Careful steps should therefore be taken towards developing the agricultural system.

The occurrence of natural disasters such as floods, cyclones, drought and famine raises the demand for children significantly. Studies by Arthur and McNicoll<sup>17</sup> and Cain<sup>18</sup> also refer to recurring natural disasters and the associated land sales as the rationale for high fertility in Bangladesh. It is time to have greater control over these environmental vagaries. A greater control over environmental vagaries will not only boost agricultural production and save valuable lives but also lower the demand for children.

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# **FERTILITY AND ADOPTION OF FAMILY PLANNING AMONG THE MUSLIMS OF 24 PARGANAS, WEST BENGAL - PART-II**

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**and**  
**MR. N.K. DAS\*\***

## **Introduction**

An earlier paper<sup>1</sup> discussed the response to family planning of Bengali Muslims belonging to the Shia and Sunni sects in the North 24 Parganas district of West Bengal state. It was observed that the rate of adoption of family planning among the two sects was very low as compared to that among the Muslims of Kanpur city, Uttar Pradesh<sup>2</sup> and the Muslims of Bangladesh<sup>3</sup>. It was further observed that the number of live births or surviving children or the rate of infant mortality among the two sects did not influence the adoption or non-adoption of family planning. The family planning programme which had been going on for more than forty years in the country, did not seem to have had any impact on these two populations, and religion offered no hindrance to family planning acceptance in either sect. What were the factors which prevented these two populations from adopting family planning measures for checking their fertility? With this end in view, it was proposed to examine some socio-cultural factors which could have a possible influence on the reproductive behaviour of these two populations.

It is an accepted fact that human fertility is influenced by many socio-cultural factors, though it is essentially a complex biological phenomenon<sup>4</sup>. It is difficult to control biological factors in order to reduce the rate of fertility, but socio-cultural factors may voluntarily be modified or altered with a view to reducing fertility rates.

The level of education, particularly among women, is generally regarded as a very important social variable, though contradictory results abound in literature. Various workers have reported the positive impact of woman's education on attitude to family size<sup>5</sup> or on family planning adoption, while Das<sup>6</sup> has reported an opposite trend. Other workers<sup>7,8</sup> including Varadarajan<sup>9</sup> who studied the Kotas of the Nilgiri Hills, have observed the woman's educational status to be inversely related to fertility. From their study of 900 Bengali speaking-couples, Chatterjee et al<sup>10</sup> concluded that the higher educational

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status of the couple may reduce their rate of fertility. Anand,<sup>12</sup> in a study conducted in Chandigarh, observed that the higher the educational level among women, the lower will be the number of children, this trend, however, was not clear in the case of males. That the husband's educational status may also play some role in fertility control has also been suggested by other workers.<sup>8,13,15</sup>

The economic condition of the couple is another important social variable. Anand<sup>12</sup> reports that there is no significant correlation between income and fertility pattern, while Agarwala<sup>13</sup> observes that "the total number of children born declines with an increase in per capita expenditure of the husband". Similar observations have been made by others<sup>14,16</sup> working in various parts of the country. Chatterjee et al<sup>17</sup> have reported that "the higher the economic status, the lower is the mean fertility". Ghosh et al<sup>17</sup> observed that the mean parity was highest among people belonging to the lowest income group, and Mouli and Mouli<sup>18</sup> found that family planning adopters in Kenchanakuppe village had a significantly better economic status. The inverse relationship between economic condition and fertility is thus, by and large, an accepted fact.

In the Indian situation, it is fairly well known that acceptance of family planning, particularly of terminal methods, is much dependent upon the number of living male offspring. Reddy<sup>19</sup> reported that the adoption of vasectomy is positively associated with the number of living male children. Mouli and Mouli<sup>18</sup> observed a strong preference for sons to daughters in both adoptors and non-adoptors of family planning. Verma<sup>20</sup> reports, "the women herself wants a son or more sons" in a village in Bihar and further states that for all Indian communities the desire for a son is a very common phenomenon. Ghosh et al<sup>17</sup> observed this preference for male children to be much more stronger among the people of higher castes than among those of lower castes in Ranchi. On the basis of a very small sample they further noted that such a preference for a male child did not exist among the Muslims of Ranchi. On the other hand, Devi<sup>21</sup> found that the Kuvi-kandha women of Koraput district desired a large number of children, particularly male children.

The present communication examines some of these socio-cultural factors in relation to fertility and family planning adoption in two Bengali Muslim populations. Thus, social variables such as education, economic status, preference for a male child, desired family size, attitudes towards and practice of family planning, and source of family planning information were examined.

### **Sample and Methodology**

The study sample was drawn from the Baduria Police Station area of the 24 Parganas district of West Bengal state. In the 24 Parganas District, the

proportion of the Muslim population is well above that at the national level i.e. 23.68 per cent, and in the area from where the present data were collected, Muslims constituted an even higher proportion - 55.43 per cent.

Unfortunately, a sect-wise break-up of the Muslim population was not available from the census of India either at the state or district or police station level. Though all the informants live permanently in rural areas, they maintain close contacts with urban centres. The Muslims in this region are Bengali-speaking people and agriculture is their main occupation, though some of them, at times are engaged in other sundry jobs.

The sample comprised of 488 couples (Shia 155 and Sunni 333) residing in Khajra Chandipur (West), Salua and Papulia villages under the Baduria Police Station. Of the 155 Shia couples, 54 and 101 belonged to Papulia and Salua villages respectively, while the 333 Sunni couples were distributed among all four villages - Khajra (121), Chandipur (168), Papulia (3) and Salua (41).

Data regarding various demographic parameters was collected through a suitable questionnaire. The parameters included fertility, mortality and reproductive wastage, education and economic status, marriage patterns and marriage distance, in-breeding, attitude towards and practice of family planning, preference for male/female child etc. One of the spouses was initially interviewed and in most cases the data were rechecked by interviewing the other spouse. The entire field work was carried out between December 1985 and February 1986.

The data on educational status and economic conditions were analysed following their arbitrary classification according to Chatterjee et al<sup>11</sup> as given below.

The educational status of the couples was classified under the four following categories: (i) Illiterate (I) - Not able to read and write, (ii) Primary (P) - Class I to Class IV, (iii) Secondary (S) - Class V to Class X (Madhyamik), and (iv) Middle (M) - Higher Secondary onwards.

The economic status of the family was categorised into three income groups on the basis of total income per month, into Low (L) - Rs. 600 or less, Middle (M) - Rs. 601-1200, and High (H) - Rs. 1201 and above.

Attitudes to family planning were categorised as "positive" when family planning was considered "good for family welfare", "negative" when it was considered "not desirable at all", and "indifferent" when it elicited "no opinion". The desire for a male child was recorded either as preference or no preference.

## **Results and Discussion**

The paragraphs below present the findings under the different socio-economic variables studied.

### ***Educational Status of the Wife***

There was no significant difference between the educational status of Shia

and Sunni wives (excluding one respondent with middle level education,  $X' = 4.20$ ;  $df = 2$ ;  $P > 0.05$ ). Most of them were found to be illiterate - Shia - 52.9 per cent and Sunni - 62.5 per cent. Primary and secondary level education had been received by 29.7 per cent and 17.4 per cent of the Shia wives, and 23.1 per cent and 14.1 per cent of the Sunni wives respectively. Only one Sunni woman had been educated upto the middle school level; this respondent, being single, has not been considered in the analysis.

Table 1 presents a distribution of the wives by the number of live births and their educational status.

TABLE 1

## Live births by wife's educational level

Wife's educational status	Sect	No of respondents (wives)	Live births	
			Number	Mean $\pm$ SE
Illiterate (I)	Shia	82 (52.9)	362	4.41 $\pm$ 0.34
	Sunni	208 (62.5)	927	4.46 $\pm$ 0.23
Primary (P)	Shia	46 (29.7)	174	3.78 $\pm$ 0.32
	Sunni	77 (23.1)	265	3.44 $\pm$ 0.33
Secondary (S)	Shia	27 (17.4)	57	2.11 $\pm$ 0.32
	Sunni	47 (14.1)	145	3.08 $\pm$ 0.30
Total	Shia	155 (100.0)	593	3.82 $\pm$ 0.22
	Sunni	333 (100.0)	1339	4.02 $\pm$ 0.17

Figures in brackets denote percentages

\*Insignificant

t values: I x P = 1.34\* (Shia) and 2.54 (Sunni)

I x S = 4.93 (Shia) and 3.65 (Sunni)

P x S = 3.69 (Shia) and 0.81 (Sunni)

The number of mean live births was observed to be the highest in the case of illiterate women, and was found to decrease with a rise in their educational status. This was true for both sects. However, the mean live births was slightly higher among the Sunni than the Shia. Further, the rate of decrease in the mean live births between successive educational levels was generally significant, except in the case of Shia wives, where it did not differ significantly.



TABLE 4  
Desired family size and actual family size

Family planning	Age group	Sect	No	Desired family size		Actual family size		No desire		
				No	Range	Mean $\pm$ SE	No		Range	Mean $\pm$ SE
Adopted	All ages	Shia	34	30	2-5	2.96 $\pm$ 0.06	30	2-7	3.38 $\pm$ 0.19	4 (13.3)
		Sunni	60	54	2-6	2.88 $\pm$ 0.12	54	1-7	2.98 $\pm$ 0.19	6 (10.0)
	40 yrs	Shia	5	5	3-5	3.60 $\pm$ 0.67	5	3-5	4.20 $\pm$ 0.43	—
	and above	Sunni	4	—	—	—	—	—	—	4 (100.0)
Not adopted	All ages	Shia	121	75	2-5	2.65 $\pm$ 0.83	75	0-6	1.94 $\pm$ 0.16	46 (38.0)
		Sunni	273	193	2-4	2.63 $\pm$ 0.19	193	0-8	2.36 $\pm$ 0.15	80 (29.3)
	40 yrs	Shia	37	5	2-3	2.20 $\pm$ 0.17	5	1-5	3.20 $\pm$ 0.57	32 (86.5)
	and above	Sunni	95	42	1-4	2.71 $\pm$ 0.13	42	0-8	4.31 $\pm$ 0.35	53 (55.8)
Adopted and not adopted combined	All ages	Shia	155	106	2-5	2.74 $\pm$ 0.07	106	0-7	2.46 $\pm$ 0.15	49 (31.6)
		Sunni	333	247	1-6	2.76 $\pm$ 0.15	247	0-8	2.00 $\pm$ 0.17	86 (25.8)
	40 yrs	Shia	44	11	2-5	3.00 $\pm$ 0.34	11	1-5	3.55 $\pm$ 0.39	33 (75.0)
	and above	Sunni	99	42	1-4	2.71 $\pm$ 0.13	42	0-8	2.71 $\pm$ 0.13	57 (57.6)

Figure in brackets denotes percentage

observed in the Ranchi study<sup>14</sup>

*Attitude to and Reasons for Adoption/ Non-adoption of Family Planning*

About 70 per cent of the Shia couples and 66 per cent of the Sunnis had a positive attitude towards family planning. About 2 per cent of the latter were indifferent towards the adoption of family planning. Table 5 indicates the reasons for adoption and non-adoption of family planning in these two populations.

TABLE 5

**Attitudes to and reasons for adoption and non-adoption of family planning**

Attitude	Shia	Sunni
<i>Positive</i>		
Children can be better looked after	28( 25.7)	68( 31.0)
Economic consideration	71( 65.1)	92( 42.0)
Consideration of mother's health	9( 8.3)	5( 2.3)
Small family is happy family	1( 0.9)	49( 22.4)
To stop population explosion	-	3( 1.4)
No comment	---	2( 0.9)
Total	109(100.0)	219(100.0)
<i>Negative</i>		
Against religion	40( 87.0)	105( 99.1)
Injurious to health	---	1( 0.9)
No comment	6( 13.0)	---
Total	46(100.0)	106(100.0)
<i>Indifferent</i>	---	8(100.0)

Figures in brackets denote percentages

The findings show that a large majority of the couples of both sects, who had a positive family planning attitude favoured it purely for economic reasons. More than 25 per cent felt that family planning enabled parents to look after their children better. While less than 1 per cent of Sunni couples with positive attitudes could not state any specific reason, a marginal 1.4 per cent stated that it helped arrest "population explosion". Among those who harboured negative attitudes, 87 per cent of Shia couples and 99 per cent of Sunni couples did so because they considered family planning to be against Islamic religion. It may be noted that 13 per cent of Shia couples did not give any reason for their negative attitude. Ghosh et al<sup>17</sup> observed that a very low percentage of Muslims in Ranchi had positive family planning attitudes while Khan<sup>2</sup> found that the majority of Muslim couples in his study had either moderately or

very positively favorable attitudes towards the adoption of family planning. He also explains that there is no bar to the adoption of family planning in Islamic religion

In Part I of this paper<sup>1</sup>, the authors observed that more women rather than their male counterparts had adopted family planning measures. Since in the Indian situation, women are generally more religious and conservative than men, religious sanction against the adoption of family planning does not really explain the low rate of its adoption in these two Muslim sects.

### *Source of Information*

Table 6 shows that most of the Shia and Sunni couples had heard about family planning either from their friends and relatives or through the radio and television; very few couples mentioned the local health centre as their source of information.

TABLE 6

#### **Source of information regarding family planning**

Source of information	Shia	Sunni
Local hospital	14( 5.6)	133( 21.8)
Private doctors	30( 11.9)	61( 10.0)
Friends and relatives	132( 52.4)	206( 33.6)
Radio and television	71( 28.2)	194( 31.7)
Cinema	5( 2.0)	10( 1.6)
Government agency	—	—
Not aware of FP	—	8( 1.3)
Total	252(100.0)	611(100.0)

Figures in brackets denote percentages

It is surprising to note that neither any government agency nor any voluntary body had ever provided any family planning information to these couples. It was also observed that a marginal one per cent of the Sunni couples were not at all aware of any family planning method. Further, among those who were practising contraception, about 27 per cent among Shia couples and 42 per cent among Sunni couples, depended on private sources for their family planning supplies, while nearly 50 per cent of the adoptor couples visited the local health centre.

### **Conclusion**

From the previous paper<sup>1</sup> as well as from the present study, family planning acceptance among these two Muslim groups of the North 24 Parganas, West Bengal, was observed to be very low as compared to that among other

Muslim populations of this country and of Bangladesh<sup>11</sup> It was also observed that neither religion nor infant mortality had any effect on family planning acceptance in these two populations Among the probable reasons for such a low rate of acceptance, the most important seems to be the lack of education and the extremely poor economic condition among the study population. The level of education among the women folk is almost nil and even their male counterparts are in no way better Compounding this is the miserably low general economic condition - more than 90 per cent of the people work as agricultural daily wage labourers. Since they are extremely poor and have no savings, they have a strong desire for male children who are looked upon as an old age security. Also, the high rate of illiteracy causes them to hold on to their conservative views that family lineage can only be continued through the male child

It is both unfortunate and surprising that inspite of the fact that family welfare services are being promoted for the last forty years, neither governmental nor voluntary agencies have made any effort to educate these couples and to make them understand the benefits of the programme It is highly regrettable to note that none of our informants had obtained any information from either of these agencies, and that a fairly good number of adoptors had to procure family planning supplies from private sources Danda<sup>21</sup> and Verma<sup>20</sup> have also concluded from their studies that laxity and inefficiency on the part of government agencies and the personnel involved in such programmes have hampered the proper implementation of this programme among underprivileged groups Unless the government personnel are properly trained and their efficiency is improved, no family planning programme can be implemented successfully and all efforts to check fertility will be elusive

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# THE IMPACT OF INFANT MORTALITY ON FERTILITY BEHAVIOUR OF WOMEN

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## Introduction

Fertility behaviour is important for both women and society. From the viewpoint of women, their fertility behaviour is linked with their emancipation and liberation. Even though women ensure the continuation of society from generation to generation through the production of new life or procreation, they have been accorded a subordinate position everywhere because of this very function of reproduction<sup>1,2</sup>. It has been, therefore, recognised by feminists that women should regulate their reproductive behaviour in order to be free, to share equally with men, the private and public domains of life. From the societal viewpoint, the death rate is taken to be an index of the well being of the people. Societies in which the people enjoy a high standard of living have a relatively lower death rate than societies where a large proportion of the population lives below the breadline.

Demographic history bears testimony to the fact that most countries experienced a high death rate during the 19th and early 20th centuries. But during the larger part of the current century, especially the last few decades, the death rate even in developing countries has declined unexpectedly. Sri Lanka, Korea and Taiwan have succeeded in reducing their death rate drastically in a very short period following the second world war<sup>3</sup>, and so also, Indonesia<sup>4</sup>, Nepal<sup>5</sup> and Bangladesh<sup>6,7</sup>. India's high death rate of the early twentieth century, has been declining since 1921, and in the recent past, the decline has been much sharper between 1950 and 1970<sup>8</sup>, declining from 27.4 per 1000 live births during 1941-51 to 14.2 in 1978<sup>9</sup>.

The infant mortality rate of India, on the other hand, has been reported to have declined from 147 per 1000 live births during 1941-45 to 126 in 1978<sup>9</sup>, though to a lesser extent<sup>10,11</sup>. Nevertheless, there is evidence of decline in infant mortality over recent years. A comparative glance at available data indicates that in India, the incidence of infant mortality is much higher than in many of the developing countries<sup>12</sup>. In China and Pakistan, it is 44 and 124 respectively<sup>13</sup> while in the world as a whole it is 84, and in more developed countries, it is as low as 19 per thousand live births; in India it is as high as 105. Nearly 50 per cent of the infants in India are reported to

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die during the post-neo-natal period<sup>16</sup>.

A series of policies have been formulated and implemented in free India to reduce the levels of infant mortality. Yet the high infant mortality rate continues. The problem assumes added significance in view of the fact that unless the infant mortality rate is reduced drastically, fertility and population growth cannot be reduced to a considerable extent and the liberation of women remains a distant reality. Furthermore, the problem becomes complicated because of the attitude of the couples who accept birth control. Generally, they resort to birth control methods after having a rather large number of children. In the Indian socio-cultural background, where the life expectancy of the infants is very low, couples want to produce more and more children so that a few may survive to adulthood. In this respect they are very rigid and are not prepared to take any risk. Therefore, only a drastic reduction in infant mortality can motivate them to have fewer children because then the fear of child loss would be removed from their minds.

India, next only to China in terms of population, is beset today with a rapid rise in her population. As per the 1981 census, India's population crossed the 68 crore mark, and is on the rise. It need not be mentioned that the growing population is a burden on the limited resources of the nation. Infant and child mortality are important factors of population growth because they are associated with the psycho-social values of couples. When our attention turns to those communities which lack public health services, where people, dominated by superstition, live in hunger and malnutrition, only then can we imagine the prevalence of high infant mortality and fertility among them.

Despite the significance of infant mortality to population, empirical data is relatively scant. It would therefore be worthwhile to make an attempt in this direction and verify empirically the influence of infant mortality on fertility behaviour and family size.

Attempts have been made by scholars to study the demographic, social and cultural factors of population growth. However, the influence of infant mortality has been very rarely assessed in these studies. Prakasam<sup>17</sup> reports that infant mortality influences, and in turn, is influenced by fertility, and concludes that women who lost their children within 28 days of birth (neo-natal death) had their next pregnancy earlier than women who had lost their children after 28 days of delivery (post-neo-natal death). The explanation he offers for this is that infant mortality develops a high desire in the couples to have an early birth and more children, and consequently, many of them do not practice contraception to limit their family size until they have a son or until they can be assured that the son they have, will survive<sup>18</sup>. In another study, Pathak and Murthy<sup>12</sup> too have claimed that infant mortality and fertility have a positive correlation. Similar conclusions have been drawn by

Parmar<sup>19</sup> in his study of 'kols' of Banda. Since such studies are scant, this inquiry is expected to make a contribution in this area.

### **Objective**

The main objective of this study then, is to ascertain the influence of infant mortality on the fertility behaviour of women. As stated above this is known to influence their status in society.

### **Hypothesis, Research Design and Sample**

The study is premised on the assumption that infant mortality has a positive correlation with the fertility of women. It has an explanatory-cum-descriptive design. While its main purpose is to make an explanatory study of the influence of infant mortality on fertility behaviour among women, it proposes to test the proposed hypothesis formulated on the basis of the research findings and conditions obtaining in Indian society.

The data was collected at the maternity centre of the State Ayurvedic college Hospital Atarra of Banda district in Uttar Pradesh. In all, 300 women obtaining maternity services during March-August 1983 were interviewed. The interviews were conducted on the second day after delivery in the maternity ward.

The hospital is located in a semi-urban area, and mainly caters to women from nearby villages. The women beneficiaries belong to different socio-economic strata. Among the women interviewed, 72 per cent were illiterate or barely literate, only 22 per cent had primary education and 6 per cent secondary and higher education. The majority of the husbands of the respondents (69 per cent) were engaged in agriculture, the remaining being either in service or self-employed. As regards their age composition, 66 per cent were in the age group 15-24 years, 27 per cent in the age group 25-34 years, and the rest (7 per cent) were 35-44 years of age. The average age of the respondents was 23.4 years.

### **Results and Discussion**

Table 1 presents a distribution of the respondents according to the number of infant deaths experienced by them as well as their fertility. The results indicate a marked and significant positive association between infant mortality and fertility.

Table 1 shows that women who had not suffered any child loss or had lost only one child, produced the least number of children with an average of 3.6. Further, this average increased to 6.4 in the case of respondents who had lost two or three infants. Thus, it is obvious that as the number of infant deaths increases, the number of live births to the mother also increase.



TABLE 1

Per cent distribution by infant deaths experienced and number of ever produced live births

Number of infants who died	No of respondents who ever produced live births			Average live births	Number of respondents
	1-5	5-9	9-13		
0 - 2	85	14	1	3.6	259
2 - 4	26	63	11	6.4	27
4 - 6	—	50	50	9.0	10
6 - 8	—	25	75	10.0	4
No. of respondents	228	60	12	4.2	(300)

$r = + 0.68$ , highly significant at 01 level of probability

Similarly, when as many as four or five infants had expired, the women had produced an average of nine children. Interestingly, this average is highest, i.e. 10 live births in the case of those women who had lost the highest number of infants, that is six or seven. It is clear therefore, that a higher level of infant mortality results in higher fertility and vice-versa.

A high positive correlation between these two variables was also noticed when calculated by Pearson's coefficient of correlation ( $r = + 0.68$ ).

### Conclusion

From the above paragraphs, it may be concluded that infant mortality is one of the important factors in the determination of the fertility behaviour of women. This effect is of significance. It may be mentioned that our findings find support from the findings of Prakasam<sup>17</sup> and other workers<sup>12, 18, 19</sup>. The findings have far reaching implications for the population policy. A high rate of infant mortality will tend to promote population growth if not arrested in time. This in turn will be responsible for adversely affecting the status of women in society.

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# **SOCIO-ECONOMIC CHARACTERISTICS INFLUENCING AGE AT MARRIAGE IN A TAMIL NADU VILLAGE**

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## **Introduction**

Socio-economic variables characterise variations in society leading to differences in various aspects concerning population. One such major aspect of population is the age at marriage which is influenced by a number of socio-economic factors. It has been often argued that socio-economic characteristics may influence the institution of marriage and thus determine the age at marriage either fully or partially. Bogue<sup>1</sup> stated that "it has been found almost universally that persons standing in a high socio-economic scale marry at a later age than persons in other socio-economic strata". In the words of Reddy and Krishnan<sup>2</sup> "Changes in age at marriage are very sensitive to economic and social change".

A large number of studies<sup>1,20</sup> have confirmed that the higher the socio-economic status characteristics viz., educational status, occupational status and economic status, the higher will be the age at marriage of the person and vice versa. However, almost all these studies (especially Indian studies) have considered the respondents' socio-economic status characteristics at the time of survey rather than at the time of actual marriage. Further, it is well known fact that in rural areas, in general, even now-a-days marriages will be initiated based on the socio-economic status of the father or sometimes even the fore-fathers. In this context, a few studies<sup>21,27</sup> conducted abroad have satisfactorily supported the contention that the higher the educational, occupational and economic status of the parents, the higher will be the age at marriage of the children (boys or girls). However, empirical support in this regard is almost negligible in India, except for a micro-level study conducted by Audinarayana<sup>28</sup> in rural Andhra Pradesh.

Under these circumstances an attempt has been made here to examine the influence of the socio-economic characteristics of the children (respondents and their husbands) and of their fathers on their age at marriage.

## **Sample and Methodology**

Data for the present study were collected from 415 respondents (women)

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of Pappampatti Village (which was purposively selected), of Coimbatore district, Tamil Nadu. The respondents were currently living with their husbands and had got married between October 1978 and September 1988. All of them were interviewed with an exclusive interview schedule

For the present analysis, age at marriage of both the respondents and their husbands has been treated as a dependent variable. On the other hand, the socio-economic characteristics of the respondents, their husbands and of their respective fathers viz., educational status, occupational status and economic status (monthly personal income) have been considered as independent variables. The Z - test was used to determine the significant differentials between the mean ages at marriage according to the socio-economic categories.

## Results and Discussion

### *Educational Status and Age at Marriage*

Education in general, and higher education in particular, leads to higher age at marriage for those who spend a longer time in school or at college. Modern education also brings about a change in attitude - from the traditional to the modern, and an educated young man/woman, tends to select a relatively well educated girl/boy for his/her bride/bridegroom. Further, through continued education, women are exposed to new opportunities and are presented with alternatives to the traditional wife and mother roles. With all these possibilities, age at marriage of males or females tend to be higher for those who are educated upto the higher educational levels, especially upto higher secondary and above, than for those who are illiterate and less educated. Several studies<sup>1-20, 29</sup> around the world and in India have supported this phenomenon significantly.

The educational status of the boy or girl and that of his/her parents, especially that of the father, also plays a great role in influencing the age at marriage. Bartz and Nye<sup>30</sup> proposed that "the lower the education of a girl's parents the more likely early marriage will occur". Burchinal,<sup>21</sup> Smith,<sup>25</sup> Waite and Spitze,<sup>27</sup> and Audinarayana<sup>28</sup> have conclusively proved this in their respective studies. To examine this fact in the population under study, the data were analysed accordingly and have been presented in Table 1.

The results presented in Panel A of Table 1 suggest that the mean age at marriage of the respondents and their husbands increased consistently from a low level of 16.72 and 22.75 to a high level of 23.31 and 27.63 respectively as their educational status increased from no education (illiterate) to college level and above at the time of their marriage. Further, the differentials between the ages at marriage of those who were illiterate and educated up to college level and above, were statistically highly significant (at .001 level) and thus supported the expected phenomenon in this regard.

TABLE 1

Mean age at marriage of respondents and their husbands according to their own and their fathers' educational status

Educational Status of	Respondents	Husbands
	No.	MAM
<i>A Respondents and their husbands</i>		
Illiterate	16.72*(111)	22.75*(93)
Primary	18.58 (121)	24.26 (85)
High school	19.80 (127)	25.62 (132)
Higher secondary	22.28 (17)	26.18 (56)
College	23.31*(39)	27.63*(49)
	*=8.080	z*=9.390
	p < .001	p < .001
<i>B Fathers</i>		
Illiterates	17.69*(169)	23.43*(199)
Primary	18.89 (109)	25.94 (109)
High school	20.60 (92)	26.40 (66)
Higher secondary and above	21.38*(48)	27.96*(41)
	z*=5.036	z*=9.206
	p < .001	p < .001
Total	19.05 (415)	25.01 (415)

Figures in brackets denote the number of respondents

An almost similar significant pattern was also observed when the mean ages at marriage of the respondents and their husbands, were cross-tabulated with their father's educational status (Panel B, Table 1). Therefore, it may be concluded that the father's education also exerts a significant positive influence on the age at marriage of his children.

### *Occupational Status and Age at Marriage*

The occupational status of both males and females is considered to be an important factor influencing age at marriage. Generally, to secure a higher occupation or profession, higher education or technical training is needed, which in turn delays the age at marriage of a person. Further, in rural areas, among agricultural labourers and cultivators, marriages take place as a matter of course since they are used to lower incomes and living standards, and matters related to dowry and searching for a suitable alliance also tend to be somewhat easier. On the other hand, the parents of those who are engaged in higher professional or administrative occupations and thereby bring home higher incomes, may not be eager to lose them by marrying them off. Some studies<sup>14,67,116</sup> in India have reported that persons working in professional and administrative occupations marry at higher ages than those who are engaged in traditional and agricultural pursuits.

The occupational status of the fathers of both the girl and the boy may

also affect their age at marriage. According to Bartz and Nye<sup>20</sup>, "The lower the occupational status of a girl's parents the more likely early marriage will occur". Burchinal<sup>21</sup> found a positive influence of the parents' occupation on the sons' or daughters' age at marriage. Similarly, among the urban elites of Ghana, Caldwell<sup>22</sup> observed that both for male and female respondents marriages occur significantly later (at 5 per cent level) in the case of children of fathers with "urban upper" occupations as compared to children of farmers or those with "urban lower" jobs. Smith<sup>23</sup> also reported that women whose fathers were farm labourers, fisherman, loggers, farm tenants or owner tenants, married relatively early, than the daughters of upper blue collar and white collar workers. On average, daughters with white collar backgrounds married some two years later than most other women.

In India, Audinarayana<sup>24</sup> in his rural Andhra Pradesh study noted that the mean age at marriage of both males and females whose parents were agricultural labourers, service workers and artisans, was significantly lower (at 1 per cent level) in contrast to those whose parents or elders were middle class farmers and professional and administrative workers. To test this fact, the present data were analysed accordingly and the findings have been presented in Table 2.

TABLE 2

**Mean age at marriage of respondents and their husbands according to their own and their fathers' occupational status**

Occupational Status of	Respondents	Husbands
<i>A Respondents and their husbands</i>		
Housewives	18.21 (168)	—
Agricultural labourers	18.02* (126)	23.17* (141)
Cultivators	—	25.54 (106)
Lower grade professional/administrative workers	21.01 ( 77)	25.93 (134)
Higher grade professional/ administrative workers	21.80* ( 44)	27.38* ( 34)
	$z^*=6.200$	$z^*=7.758$
	$p < .001$	$p < .001$
<i>B Fathers</i>		
Agricultural workers	18.16* (247)	23.96* (245)
Lower grade professional/administrative workers	19.70 (125)	26.02 (130)
Higher grade professional/administrative workers	22.28* ( 43)	28.15* ( 40)
	$z^*=7.065$	$z^*=10.180$
	$p < .001$	$p < .001$
Total	19.05 (415)	25.01 (415)

Figures in brackets denote the number of respondents.

Panel A of Table 2 indicates that the respondents as well as their husbands who were in higher grade professional and administrative occupations at the time of their marriage, were married significantly later (at .001 level) - 21.80 and 27.38 years, respectively - than those who were agricultural labourers (18.02 and 23.19 respectively). Respondents who were "housewives" on average, also got married much earlier (18.21 years)

The findings in Panel B of Table 2 also indicate that the mean ages at marriage of both the respondents and their husbands, were much lower (18.16 and 23.96 years, respectively) when their fathers were agricultural workers, whereas their ages were comparatively much higher when their fathers were engaged in lower grade (19.70 and 26.01) and higher grade (22.28 and 28.15, respectively) professional or administrative occupations. The differences in the mean ages at marriage of those respondents and their husbands whose fathers belonged to the low extreme occupational groups, were statistically highly significant (at .001 level) and thus supported the earlier postulate.

#### *Economic Status (monthly income) and Age at Marriage*

Personal monthly income of the prospective bride and groom may also influence their age at marriage in several ways. Generally, a higher personal income is usually associated with higher occupational status, which needs higher education and training, and so delays marriage. Further, as mentioned earlier, parents from middle or lower socio-economic status groups may delay their children's marriages in order to enjoy the benefits of their (children's) earnings. On the other hand, in rural areas, there is a possibility of getting income or inheritance of land early, through which they can afford to maintain a family and thus may marry early.

Additionally, the parents' economic status or wealth may also have a bearing on the age at marriage of their children. While analysing the historical trends of marriage patterns in Hingham, Massachusetts, Smith<sup>24</sup> found that among those daughters born of marriages between 1781 and 1840, "the richest 20 per cent daughters married at the age of 24.5 years, whereas the poorest 20 per cent married at the age of 22.9 years." He further elaborated that "in the 19th century also daughters of the wealthy married later than the daughters of the less wealthy and the slight positive relationship between wealth and male marriage age becomes much stronger during the same period." In the rural areas of Andhra Pradesh, India, Audinarayana<sup>28</sup> also observed a significant and uniform positive association between the economic status of the parents/elders and the mean age at marriage of both men and women, among the four cultural groups - muslims, harijans, backward and forward castes. To observe whether a similar phenomenon exists in the study area, the present data were analysed and are given in Table 3.

TABLE 3

Mean age at marriage of respondents and their husbands according to their own and their fathers' monthly income

Monthly Income (in Rs ) of	Respondents	Husbands
<i>A Respondents and their husbands</i>		
Not earning a personal income	18.21 (168)	—
600	18.25*(134)	23.43*(123)
601--1200	20.35 ( 46)	25.75 (158)
1201+	21.88 ( 67)	26.87 ( 84)
	$z^*=8.646$	$z^*=8.806$
	$p < .001$	$p < .001$
<i>B Fathers</i>		
600	17.64*(185)	23.67*(183)
601-1000	19.35 ( 74)	25.72 (148)
1001+	20.58*(156)	26.68*( 84)
	$z^*=6.879$	$z^*=5.272$
	$p < .001$	$p < .001$
Total	19.05 (415)	25.01 (415)

Figures in brackets denote the number of respondents

Panel A of the table reveals that the mean age at marriage of both the respondents and their husbands increased from a lower level of 18.25 and 23.43 years, to a higher level of 21.88 and 26.87 years, in correspondence with their economic status of Rs 600 or below and Rs 1201 and above. The differences between the lower and higher mean ages at marriages were statistically highly significant (at .001 level) and thus confirmed that the higher personal income of unmarried boys and girls will lead to higher age at marriage.

It is interesting to note from Panel B of Table 3 that the mean ages at marriage of the respondents and their husbands were recorded as lower (17.64 and 23.67 respectively) than those of respondents and their husbands whose fathers were used to a lower monthly income (Rs. 200-600). However, the age at marriage increased to 19.35 and 25.72, and then to 20.58 and 26.63 respectively for those whose fathers had a monthly income of Rs. 601-1000 and Rs 1001 and above respectively. This increase in the mean ages at marriage of the respondents and their husbands with an increase in their fathers' monthly income was found to be highly significant (at .001 level).

### Conclusion and Implications

From the foregoing results and discussion, it may be concluded that all the socio-economic characteristics under consideration viz., educational status, occupational status and economic status of the children (respondent and husbands) and of their fathers, exerted a significant positive influence on the



age at marriage of the respondents and their husbands. Therefore, the policy makers should aim at improving the socio-economic status of both the younger as well as older people. This may be done through such measures like the provision of higher and vocational education, effective implementation of the national adult education programme, assistance from banks for income generating activities viz., dairy/poultry farming, basket-making, weaving, manufacture of matches, mats and bricks etc., and also through the effective implementation of reservation of seats for the down-trodden both in educational and employment sectors. Through such measures, parents can postpone the marriage of their offspring by giving them higher education and by getting some income from them for some time, through regular employment or through an income generating activity, whereas members of the younger generation may postpone their marriages by spending more time in school or college, and by getting reasonably good income through self-employment or other jobs.

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# **SOCIO-DEMOGRAPHIC PROFILE OF TUBECTOMY ACCEPTORS - AN ARMY EXPERIENCE**

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## **Introduction**

In India, the national family planning programme was launched in 1952 and sterilisation as a method of birth control, was officially introduced in 1956. This vital health programme was being promoted in the armed forces as a welfare measure long before it was introduced in the national programme. The sterilisation operation, especially tubectomy, has been found to be a very effective, dependable and one-time method to control the country's most formidable problem of population explosion. During 1985-86 alone, nearly 4.90 million sterilisation operations were performed in India and in the 7th Five Year Plan (1985-90) a target of 31 million sterilisation operations have been projected by the country's health planners and demographers<sup>1</sup>.

Tubectomy constitutes the mainstay of the family planning programme of the armed forces. It is well known that a woman's motives for wanting to adopt terminal methods of contraception are determined by her life situation as well as by the values and customs of the community in which she lives. A number of demographic and social variables play an important role in the acceptance of different contraceptive measures. For example, if a woman accepts the sterilisation operation after making her full contribution to the population situation, it becomes a sheer waste of national resources. Therefore, in order to promote the adoption of the terminal method after achieving the optimum family size, which in the national programme is the small family norm of two children, it is necessary to understand the socio-demographic factors associated with its acceptance. There being no reports in the available literature about acceptor characteristic studies among armed forces personnel, it was considered worthwhile to determine the socio-demographic characteristics of acceptors of tubectomy in this sector.

## **Sample and Methodology**

The present study was carried out in a few military garrisons during 1988.

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Secondary data, available with the seven Family Welfare Planning Centres (FWPC) (two class I and five class II) were collected using a pretested schedule with the help of staff of various health units through specialist officers in Preventive and Social Medicine. The data relating to all the 1124 tubectomy cases performed during 1987 was collected, collated and compiled from these FWPCs and statistically analysed.

## Results and Discussion

### *Age at Acceptance*

The distribution of respondents according their age at the time of tubectomy is presented in Table I.

TABLE I

#### Distribution by age at sterilisation

Age at sterilisation (years)	No. of respondents
15-19	1 ( 0.1)
20-24	235 ( 20.9)
25-29	496 ( 44.2)
30-34	301 ( 26.8)
35-39	88 ( 7.8)
40-44	2 ( 0.2)
Total	1123 (100.0)

Figures in brackets denote percentages.

Table I shows that as many as 65 per cent of the respondents were in the age group of 20-29 years, and those under 20 constituted less than 1 per cent.

Similar observations were made by Lila Ram et al<sup>2</sup> in 1979, Jamshedji et al<sup>3</sup> in 1980 and Yadav et al<sup>4</sup> in 1984. However, in 1977, Mittal et al<sup>5</sup> found the maximum number of acceptors in the age group 30-34. National level figures for 1985-86<sup>1</sup> indicate 50 per cent of the acceptors in the 20-29 age group and about 31 per cent in the 30-34 age group.

Further analysis of the data showed that the mean age of tubectomy acceptors in the present study was found to be 29.1. This is well below the mean age of sterilisation in India which was found to be 31.8 in 1986<sup>1</sup>. Thus, it can be concluded that the spouses of army personnel in this study have accepted sterilisation at a comparatively younger age.

### *Religion*

A religion-wise distribution indicated that the majority of the subjects

(85.7 per cent) were Hindu, followed by Sikhs (9.3 per cent) and Muslims (3.1 per cent) respectively; Christians constituted 1.9 per cent of the sample.

### *Educational Status*

The distribution of acceptors as per their educational status and that of their husbands is given in Table 2.

TABLE 2

**Distribution of acceptors as per their educational status and that of their husbands**

Literacy level	Husbands	Acceptors
Illiterate	140 ( 12.5)	158 ( 14.1)
Primary school	228 ( 20.3)	525 ( 46.7)
Middle school	222 ( 19.8)	191 ( 17.0)
High school	435 ( 38.7)	160 ( 14.2)
Graduate & above	98 ( 8.7)	89 ( 7.9)
Total	1123 (100.0)	1123 (100.0)

Figures in brackets denote percentages

Table 2 shows that the majority of the respondents (46.7 per cent) were educated upto the primary level and 39.2 per cent were educated beyond this level. The proportion of illiterate respondents was low (14.1 per cent) as compared to the findings of Shastri<sup>6</sup> and Saha<sup>7</sup> whose samples had 58.1 and 61.7 per cent of illiterate acceptors respectively. The mean number of years spent in school was also found to be higher. The national figures among tubectomy acceptors indicate that almost half (49.5 per cent) were illiterate, a third (33.4 per cent) had completed upto primary school, and 10 per cent upto middle school<sup>1</sup>.

The literacy rate among sterilisation acceptors in the army was much higher as compared to the findings of other studies. The mean number of years spent in school was found to be 6.3 years which is higher than that of Lila Ram et al.<sup>2</sup> and Jamshedji et al.<sup>3</sup>, who reported durations of 4.6 and 4.5 years respectively, and far higher than those reported (2-3 years) by Yadav et al.<sup>4</sup>.

The literacy rate of the husbands of the acceptors was found to be high - 87.5 per cent had received varying degrees of formal education with an average of 7.8 school years. This is comparable to the findings of other workers<sup>2-4</sup>. At the all India level<sup>1</sup>, as many as 40 per cent of the acceptors' husbands were found to be illiterate, and about 37 and 12.5 per cent had studied upto the primary and middle school levels respectively.

### *Rankwise Distribution*

A distribution of acceptors on the basis of the rank of their husbands

revealed that 80.2 per cent of the acceptors were wives of ranks other than officers or JCOs. There were 31 cases of tubectomy performed amongst the civilian defence employees (2.8 per cent). The wives of officers and JCOs constituted 10.8 and 6.2 per cent respectively of the sample.

### *Number of Children*

The distribution of acceptors as per the number of children at the time of operation indicates that over half (51.6 per cent) of the acceptors had three living children, about a third (31.4 per cent) had two living children at the time of operation, and the rest (17 per cent) had four or more children. Thus, about 83 per cent of the respondents had three or fewer children at tubectomy; at the national level, about 60 per cent (1985-86)<sup>1</sup> of the tubectomy acceptors had three or fewer living children. These findings are encouraging when compared to this and earlier studies<sup>5,8</sup> which report that about 75 per cent of the women had accepted sterilisation only after having four or more children, though Jamshedji et al<sup>1</sup> have reported a slightly higher figure (55 per cent).

The average number of children per acceptor was found to be 2.9. This compares favourably with the national average of 3.2. Earlier workers have observed averages ranging between 4.1 and 4.7<sup>9,10</sup>.

### *Contraceptive Practice Prior to Sterilisation*

Almost three-fifths of the acceptors (58.4 per cent) had not used any contraceptive method prior to accepting sterilisation. Among those who had practiced contraception, the IUD was found to be the most popular method (15.7 per cent acceptance) followed by Nirodh (11.9 per cent acceptance). The oral pill was found to be least popular and had been used by 8.3 per cent of the acceptors prior to adopting the terminal method, while about 5.6 per cent mentioned the use of other conventional methods.

Khorana<sup>11</sup> and others<sup>11</sup>, also observed very low use of contraception among tubectomy acceptors prior to sterilisation acceptance. However, Sadashiviah<sup>10</sup> reported that the IUD was used by 18.2 per cent of his acceptor sample before switching over to tubectomy. The popularity of the IUD is not unexpected considering the wide publicity it has received and its easy availability at family welfare centres.

### **Conclusion**

In conclusion, it may be mentioned that the maximum number of acceptors in this study were Hindus in the age group 20-29 years. Most of them (85.9 per cent) were literate, had approximately three living children and about 60 per cent had not used any contraceptive method earlier.

An indepth evaluation of the programme needs to be carried out periodically

so as to not only consolidate the gains of health education achieved so far but also to motivate couples on the need for small families and the necessity for spacing births with non-terminal contraceptives.

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# **MARRIAGE AND REMARRIAGE AMONG BOMBAY ROMAN CATHOLICS**

**DR. S. IRUDAYA RAJAN**

## **Introduction**

Marriage is an important factor in population dynamics as it affects fertility directly and, to some extent, mortality and migration. It is a demographic phenomenon involving biological, social, economic, legal and in many cases, religious aspects. Classification of a population by various marital status categories is an important mode of studying the composition of a population with regard to its potential for demographic change. The formulation and dissolution of families are also influenced to a large extent by marriage.

Despite the fact that nuptiality statistics have important demographic, economic and social implications, they have received little attention as compared to natality and mortality statistics in developing countries. The study of nuptiality, according to the Multilingual Demographic Dictionary, "... deals with the frequency of marriages ... , with the characteristics of persons united in marriage; and with the dissolution of such unions'."

The legal marriage contract can be broken in any one of the following three ways: (a) by a divorce decree, (b) by an annulment, or (c) by the death of one of the spouses.

Divorce is defined as, "a final legal dissolution of marriage, that is, the separation of husband and wife by a judicial decree which confers on the parties the right to civil or religious remarriage, according to the law of each country". Such a dissolution of marriage is strictly prohibited in the Roman Catholic church in India as elsewhere in the world.

Annulment is another way in which the marriage bond can be dissolved. An annulment makes the contract void from its inception, whereas a divorce makes the contract void as from the date of the decree. It is defined as, "the invalidation or voiding of marriage by a competent authority according to the law of each country which confers on the parties the status of never having been married to each other". An annulment, like a divorce, is a legal decree voiding the marriage contract. Annulment, however, is distinct from divorce in that the former is granted because of some conditions existing at the time of contract, whereas the latter is granted because of a condition arising from the contract. As a result, annulment confers on the parties the status they held before the annulled marriage (usually "single") whereas divorce confers the status of "divorced". Though the Roman Catholic Church does not recognise divorce as a way of dissolution of the marriage contract, it accepts



annulment cases and declares them as "null and void" Some are of the opinion that Roman Catholics use this vehicle frequently for dissolving the marriage contract as a substitute for divorce. The information about couples whose marriages have been declared as "null and void" is kept at the archbishop's house in the respective diocese in India. For instance, records of cases which have occurred in the archdiocese of Bombay are at the archbishop's house in Bombay, India.

Widowhood is the third way in which the legal contract of marriage may be dissolved. Upon the death of one of the spouses, the surviving spouse experiences the condition of widowhood. The Roman Catholic church collects information on the widowhood of persons, if they remarry in the church.

In addition to records of baptisms and burials, the Roman Catholic church also maintains a continuous register for nuptials which are performed in the respective parish churches. With regard to the data collected through the Roman Catholic church on baptisms, burials and nuptials in Bombay, we found that nuptial registers are comparatively more accurate and complete than registers of baptisms and burials<sup>2</sup>

Age at marriage and age at first marriage have their own meanings. The former takes into account the age at first marriage, second and consequent marriages whereas the latter relates only to persons who unite in wedlock for the "first" time. Surprisingly, no study has been conducted as yet among the Roman Catholics to study their age at first marriage. The present study covering Roman Catholics in certain parishes in the archdiocese of Bombay, was therefore undertaken with the purpose of examining the trends in the age at marriage and remarriage, factors which have significant demographic and socio-economic implications

### Sample

The data for the study were collected from the parish records available in the archdiocese of Bombay, India. The four parishes investigated for this research were the Holy Cross Parish, Kurla; Our Lady of Perpetual Succour Parish, Chembur; Saint Anthony of Lisbon Parish, Mankhurd; and Saint Sebastian Parish, Marouli. The data were analysed in relation to age at marriage and remarriage.

Data on the number of marriages registered in the four selected parishes of the Bombay archdiocese during the period 1869-1984 are presented in Table 1.

**TABLE 1**  
**Some salient characteristics of the selected parishes in the archdiocese of Bombay**

Parish	Location	Period covered	Nuptials registered	Population in 1982
Holy Cross	Kurla	1935-1984	1652	10000
Our Lady of Perpetual Succour	Chembur	1949-1984	861	4892
St. Anthony of Lisbon	Mankhurd	1869-1984	381	3000
St. Sebastian	Marouli	1903-1984	433	3500

During the periods for which data were available, among the four parishes, the highest number of marriages was registered in the Kurla parish, followed by the Chembur and Mankhurd parishes. The Marouli parish recorded the least number of marriages. The number of marriages in each parish provides an indication of the marriageable population of the particular parish.

## **Results and Discussion**

### *Age at First Marriage*

Table 2 presents the mean age at first marriage for males and females in the four selected parishes, and Appendix 1 provides agewise details.

Data from the Kurla parish indicated that of the total 1652 registered marriages, no male had married before completion of 15 years between 1935-64, and of the 905 marriages solemnised during 1965-84, no male had married before his nineteenth year. While only 37 per cent had married between 25-34 years of age during 1935-44, this percentage increased to 69 in 1975-84. The percentage of males who married between 20-24 years was 33 in 1935-44, it declined to 20 in 1955-64, and further to 14 in 1975-84. On the other hand, the percentage of males who married between 25-29 years was 26 in 1935-44, increased to 33 in 1955-64 and to 38 in 1975-84. Bridegrooms who married between 30-34 years of age constituted 11 per cent of the marriages during 1935-44 and this proportion steadily increased to 28 in 1955-64 and to 31 per cent in 1975-84. While only 6 per cent of bridegrooms were married at 35 years of age and above in 1935-44, this percentage increased to 13 in 1975-84. This indicates an increasing proportion of males marrying at higher ages. The mean age at first marriage for males increased from 26.4 years in 1935-44 to 30.0 years in 1975-84.

Age at first marriage among females also revealed a similar pattern. Of the total 1652 reported marriages, no female was reported as married before she completed fifteen years of age. The percentage of females who married between ages 15-19 declined steadily from 50 in 1935-44 to 8 in 1975-84 while the proportion marrying at ages 20-24 increased substantially from 29 in 1935-44 to 45 in 1975-84. An interesting fact observed in 1975-84 was that 34 per cent of females were married between 25 and 34 years of age, and 9 per cent even at 35-39 years. The mean age at first marriage among females thus showed an increase of 5 years between 1935 and 1984.

In the Chembur parish where continuous matrimonial registers have been maintained since 1949, the total number of registered marriages was 861. Among these, no male was married before 19 years, and most had married between 25-34 years of age. For instance, the percentage of married males who were aged 25-34 was 72 in 1955-64, 74 in 1965-74, and 78 in 1975-84. In 1975-84, 12 per cent of males were married after they completed 35 years.

**TABLE 2**  
**Distribution of males and females by mean age at first marriage**

		Mean age at first marriage (years) during											
		1935-44	1945-54	1955-64	1965-74	1975-84							
A. Kuria:													
Males		26.35	27.99	28.42	29.15	29.96							
Females		20.53	21.93	23.39	23.49	25.25							
1949-64		1965-74	1975-84										
B. Chembur:													
Males		30.90	30.85	30.73									
Females		25.26	25.32	25.57									
1969-74		1975-84	1985-94	1995-04	2004-14	2015-24	2025-34	2035-44	2045-54	2055-64	2065-74	2075-84	
C. Mankthurd:													
Males		24.00	27.08	21.50	23.93	25.36	25.00	26.25	25.50	26.67	30.20	28.85	29.92
Females		17.14	18.83	16.25	18.86	18.93	20.00	18.65	18.61	22.02	22.75	22.89	24.77
D. Marouli:													
Males		21.12	23.70	23.15	26.33	27.68	28.05	30.70	30.46				
Females		17.61	17.87	17.69	21.21	20.89	22.03	23.62	25.52				

The mean age at first marriage for males was around 31 years during the period under investigation. Again, no female was married before she celebrated her nineteenth birthday. During almost all the three decades, three-fourths of the females were married between the ages 20 and 29, and during 1935-44, no female had entered into marriage after 39, while 11 in this age group had married in 1975-84. There was thus a marginal increase of one year in the female mean age at marriage in Chembur.

The nuptial records of the Mankhurd parish provided data from 1969-1984. Though the data covered the last 115 years, the total number of registered marriages was 381. Of these, no male had married before 15 years and 16 males were married between 15-19 years. The percentage of males who were united in marriage between 20-24 years was 26 in 1869-74, 28 in 1925-34, and showed a slight decline to 18 in 1975-84. Over the last three decades, most of the males were married between 25 to 34 years of age. This percentage was 75 in 1955-64, 59 in 1965-74 and 62 in 1975-84. The recent decline in the percentage can be explained by looking at the next age group - 35-39. It reveals that 8 and 11 per cent of males solemnised their marriage in this age group in 1965-74 and 1975-84. Yet another surprising feature noticed in this parish is that no male went for marriage after the age of 40 during 1869-1944, but 13 males were married after they crossed this age during 1945-84. Though the mean age at marriage has witnessed a lot of fluctuations, it was 30 years for males between 1975-84.

Over the last 115 years, no female residing within the Mankhurd parish was married before she celebrated her fifteenth birthday. The percentage of females who were married between 15-19 years was 73 in 1869-74, declined to 71 in 1925-34 and 14 in 1975-84. There was a major shift in the marriageable age for females from 15-19 to 20-29 during the period under study. Thus, the percentage of females who married between the age 20-29 was 6 in 1869-74, trebled in 1925-34 and increased tremendously to 74 in 1975-84. In other words, most of the females married between the ages 20-29 in Mankhurd parish, and the mean age at marriage for females was 25 years for the recent decade (1975-84).

The Marouli parish revealed similar characteristics as the Mankhurd parish. During 1903-14, 9 per cent of males solemnised their marriage between the ages 25-34 whereas the percentage was 68 in 1975-84. Females who married between 20-29 years of age during the same period constituted 15 per cent of the marriages and increased to 74 per cent in 1975-84. The mean age at marriage for males was 31 years during 1975-84 whereas for females it was 26 years.

The foregoing analysis reveals that in all the four parishes, as many as three-fourths of the males (73 per cent) were married between 25-34 years of age in 1975-84 and 78 per cent of females performed their marriage

between the ages of 20 and 29 years.

In Indian society, marriage is the only socially sanctioned system for sexual union between men and women and hence patterns and trends in age at marriage are closely related to age patterns of fertility in a population. McDonald<sup>1</sup> points out that, "age at marriage has received surprisingly little attention in other relevant branches of social sciences such as anthropology and comparative family sociology. Most standard text books in social anthropology make virtually no mention of age at marriage and age at marriage is not included as a variable in Murdock's *Anthropological Atlas*"

Malthus<sup>4</sup> in his thesis on population, recommended delayed marriage as a preventive measure which is morally acceptable for checking population growth. Davis and Blake<sup>5</sup> postulated that early age at marriage in pre-industrial societies was a societal measure to ward off the threat of failure in population replacement, while Freedman<sup>6</sup> considered delayed marriage as a fertility control measure. Matras<sup>7</sup> also recognised age at marriage and control of marital fertility as the two aspects of family formation that influence the number of children ever born.

Empirical data have been used by various authors to explain the fertility decline experienced in European populations. Spengler<sup>8</sup> explains that France, at least since 1860, had reduced the natural increase of its population by delaying marriage and limiting marital fertility. Similar analyses were reported for Europe<sup>9</sup>, Great Britain<sup>10</sup> and America<sup>11</sup>, while Grabill and his co-workers<sup>12</sup> explained changes in fertility for the latter, since the beginning of the twentieth century by the age at entry of women into the childbearing period.

Recent studies recognise age at marriage and duration since marriage as the two variables important in understanding differentials in fertility. The World Fertility Survey states, "although age at marriage is a topic of interest to demographers in its own right, it has been singled out for extensive study primarily because of the impact of nuptiality on fertility"<sup>13</sup>.

Women who marry early are exposed to conception throughout the most fecund years of their lives, for a comparatively longer duration which tends to shorten the inter-generational period, thus influencing upward fertility. To quote Trussell<sup>14</sup>, "in most countries fertility is predominantly confined to marriage (or stable unions) and marriage itself signals the beginning of exposure to risk of pregnancy. In societies in which control of marital fertility is absent, the pattern of first marriage, the proportion who never marry and the pattern of marital dissolution and remarriage, jointly determine the overall level of fertility. The most important of these determinants are the first two. Even in populations in which marital fertility is modestly controlled, marriage patterns still play a predominant role in governing fertility levels". Lesthaeghe<sup>15</sup> pointed out that in developing countries control of marital

fertility alone cannot achieve a replacement level of fertility, and that in order to bring down fertility, it is necessary that age at marriage and proportion who never marry should rise as well.

Attempts are therefore being made by several countries with low ages at marriage, to raise it. Although the timing of marriage is known to have important demographic implications, it has to be realised that a complex of related changes are involved in making a marriage decision. Important among these are the choice of partners, the expected relationship between the spouses, the position of the young in the family, especially the women, distribution of decision making power among members of family, expected dependence of the young on the kin, etc, the latter two being most important. It may be noted that when the decision rests with the kin, the age at marriage is low. However, the availability of dependable contraceptives in the developed countries has lowered the age at marriage inspite of the fact that the choice rests with the individual and not kin.

Age at marriage of females has been classified by Bogue<sup>15</sup> as child marriage (less than 18 years), early marriage (18 to 19 years), marriage at maturity (20 to 21 years) and late marriage (22 years and over). He also shows that a large proportion of the females marry within a span of a few years between ages 18 and 22 and most of the remaining marry before the age of 30.

Discussing the age at marriage in European societies, Davis<sup>16</sup> says that "anything that makes a marriage less of a fateful decision, less of an economic and social commitment, less of an irreversible step, will tend to lower the age at marriage". He further points out that in agrarian European or in early American populations adequate support for the family was essential before marriage was settled. Therefore, age at marriage was higher in north-west Europe than in the U.S. and Canada since land was scarce in the former than in the latter. The age at marriage declined further in the U.S. since there was an increasing trend in the labour force participation by married women with or without children which reduced the economic responsibility of males. The respectability given to contraception further helped to reduce the social responsibility of marriage. Another change that helped in lowering the age at marriage was the ease and respectability of divorce and remarriage<sup>17</sup>.

In contrast to Europe and the U.S. where the conjugal family and the individual respectively were at the core, in the traditional Indian family structure every individual is expected to be primarily under the control of the family through its head in particular and elders in general. The major role of the woman is to meet all the requirements of the members of the family, and the social attitude is that women are not fit to be independent<sup>18</sup>. At every stage in her life she is expected to be under the dominance of someone, her father, husband or son. Marriage was the transfer of the father's domination over her in favour of her husband, a transfer which was therefore required to

take place before the girl reached the age when she might start questioning<sup>19</sup>. Women in these societies were expected to be proficient in housekeeping, not to pursue academic interests and were mostly illiterate. On the other hand, the man was expected to undergo education for at least twelve years after his initiation at the age of eight, and was therefore expected to marry at the age of 20 or later. Thus, there was a wide gap between the ages of the brides and the grooms. The girl could therefore never feel an equal partner and she accepted the position of a subordinate throughout her life. This type of traditional family continues to dominate even in urban areas in present times. Under these conditions the age at marriage of females continues to be low in India.

It is well known that among all the countries for which data are available, the lowest female age at marriage was found in India. Agarwala<sup>20</sup>, in a study of differential age at marriage among various religious groups in India pointed out, "Christians have the highest mean age at marriage, followed by Sikhs whereas Muslims and Hindus have the lowest".

Prior to the Civil Marriage Act of 1872, a provision of the Indian Penal Code rendered the consummation of marriage before the girl had attained the age of 10, punishable with life imprisonment. The Sarda Act of 1929 fixed the marriage age of boys at 16 and girls at 14. It extended only to British India, and did not prohibit child marriages nor did it render them null and void. Consequently, people started performing child marriages in nearby Indian States.

In 1949, the marriageable age of the girl was raised from 14 to 15. The latest legislation, the Child Marriage Restraint Act of 1978 has revised upwards the minimum age at marriage of a girl to 18 years and the boy to 21 years. Any violation of these conditions was made a cognisable offence. All these laws were followed only in their breach considering the number of child marriages taking place even today. In many communities in India, even today child marriage is practised in large numbers. During certain marriage seasons, marriages involving several child brides and grooms are celebrated with great fanfare. For instance, during Akha Teep, an auspicious day, more than 10,000 child marriages are still performed<sup>21</sup>. Child marriages are more prevalent among the backward conservative communities plagued by illiteracy, ignorance and poverty.

According to the census figures, the singular mean age at marriage of females has risen from 12 during 1921-31 to 18 years during 1971-81. According to the 1981 census, Christians have the highest mean age at marriage, followed by Sikhs and Jains both in rural and urban areas. However, all religious groups showed an increasing trend in their age at marriage. The mean age at marriage was higher than the all-India average for Christians, Sikhs, Buddhists and Jains in the rural areas, and for Christians, Sikhs and Jains in the

urban areas<sup>22</sup>.

A recent study undertaken by the Centre for Development Studies, Trivandrum<sup>23</sup> revealed that between 1941-71, the median age at marriage for females increased from 15.08 to 15.64 in rural areas and from 15.99 to 17.63 in urban areas in the country as a whole. It also indicated that the age at marriage among Christian females was highest during the period under investigation. Many base-line surveys conducted in recent years also report a similar picture of low age at marriage for females, for example, in Orissa 44 per cent of females were married before age 15 and 42 per cent before 18<sup>24</sup>, while in Maharashtra the mean age at marriage for currently married women (15-44) in Osmanabad district was 13.70 whereas in Parbhani, it was 13.11<sup>25</sup>. Yet another base-line survey<sup>26</sup> reports the age of marriage for Bihari women below 50 to be 13 years.

Nevett<sup>27</sup>, a pioneer in the use of matrimonial registers for calculating the age at marriage among the Roman Catholics in some of the parishes in Madras, Madurai, Arthoor and Manalur, found that the average age at marriage of females was never less than 18 years even in 1939. He, however, never computed the age at first marriage. Srivastava<sup>28</sup> collected some data from the Taleigao parish in Goa for the years 1830 to 1913, and furnished information on the age at marriage for bridegrooms and brides. He observed that even during 1860-69, the mean age at marriage among males was 30 years and females was 19 years.

The present paper reveals that in the decade of 1975 to 1984, in all the four parishes studied, almost three-fourths of the males (73 per cent) married between the age of 25 to 34 years, and an almost similar proportion of females (78 per cent) performed their marriage between 20 to 29 years.

### **Remarriage Pattern**

In India, as in many other countries, religion plays a pivotal role in prescribing many taboos and shaping the attitudes of the people who follow them. In India, for instance, high-caste Hindu widows were strictly prohibited from remarrying since the days of Manu, the law giver of Hinduism, who decreed that a widow should never entertain the idea of remarriage. From about 1000 A.D., additional restrictions were imposed on remarriage; even a child-widow whose marriage had not been consummated, was prohibited from remarrying<sup>29</sup>. These restrictions stem from the view that marriage is a union of souls and not merely of bodies, that widowhood is a punishment given by God, and that the widow is going to join her husband in heaven after death or in this world in her next birth<sup>30</sup>. Keeping this in mind, this paper also attempted to explore the incidence of remarriage and the age at second marriage among the study sample.



Among Roman Catholics there is no religious injunction prohibiting widow marriages. However, there is a strong injunction against divorce. Jesus said to his disciples, "From the beginning of creation, God created the male and female. For this reason a man shall leave his father and mother and be joined with his wife and the two become one flesh. What therefore God has joined together, let not man put assunder." He went on to add, "Whoever divorces his wife and marries another commits adultery against her, and if she divorces her husband and marries another, she commits adultery" (Mark 10 : 6-11). Even today, divorce is strictly prohibited and forbidden by the Roman Catholic church. Saint Paul wrote in his first letter to the Corinthians that, "To the unmarried and widows, I say that it is well for them to remain single as I do. But if they cannot exercise self-control, they should marry. To the married, I give charge, not I but the Lord, that the wife should not separate from her husband (but if she does, let her remain single or else be reconciled to her husband) and that the husband should not divorce his wife. A wife is bound to her husband as long as he lives. If the husband dies, she is free to be married to whom she wishes, only in the Lord" (I Corinthians 7 : 8-11). Thus, widow remarriage is not prohibited among Roman Catholics, but bachelorhood and spinsterhood are encouraged.

Remarriage, second and consequent marriages in any population depend on the age at first marriage among males and females, the age difference between the partners at the time of first marriage, the incidence of divorce (not applicable to Roman Catholics), or annulment, and the prevalence and acceptance of remarriage in the society.

As discussed earlier, a major shift in the age at marriage for females from ages 15-19 to 25-29, and males aged 20-24 to 30-34 years over a period of 100 years was observed in the four parishes of the Bombay archdiocese. The modal age at first marriage among the Roman Catholic boys and girls was 32 and 27 respectively during 1975-84. This indicates a five year difference between the ages of the husband and wife.

The age difference between husband and wife has an influence on widowhood and remarriage. For instance, if the wife's age is higher than the husband's age (say 7 years) then the age at widowhood will be different from that of the population where the husband's age is always higher than the wife's. The matrimonial registers for the four parishes reveal a number of recorded marriages where the age of the wife is higher than that of the husband.

The total number of remarriages in the present study were observed to be quite insignificant as compared to the total number of first marriages in all the years in the four parishes. Consequently, the data from the four parishes were pooled together for the analysis. Three types of remarriages were considered:

Type I: Widower-spinster marriage (remarriage of one partner)

Type II: Widow-bachelor marriage (remarriage of one partner)

Type III: Widower-widow marriage (remarriage of both)

A distribution of marriages by these three types is presented in Table 3.

TABLE 3  
Distribution of marriages by marital status

Period	Total	Males			Females		
		First marriage (N)	Second marriage with a		First marriage (N)	Second marriage with a	
			spinster	widow		bachelor	widower
<i>A Kurla</i>							
1935-44	160	131	20	9	147	4	9
1945-54	241	215	21	5	229	7	5
1955-64	346	326	15	5	330	11	5
1965-74	400	385	13	2	392	6	2
1975-84	505	496	8	1	499	5	1
<i>B Chembur</i>							
1949-64	123	122	1	0	123	0	0
1965-74	238	237	1	0	236	2	0
1975-84	500	494	5	1	494	5	1
<i>C Mankhurd</i>							
1869-74	15	10	5	0	14	1	0
1875-84	19	12	3	4	15	0	4
1885-94	12	10	2	0	23	0	0
1895-04	11	7	4	0	11	0	0
1905-14	8	7	0	1	7	0	1
1915-24	6	4	2	0	6	0	0
1925-34	14	12	2	0	13	1	0
1935-44	20	15	4	1	18	1	1
1945-54	23	18	3	2	21	0	2
1955-64	40	37	3	0	40	0	0
1965-74	90	85	4	1	88	1	1
1975-84	123	120	2	1	121	1	1
<i>D Marolli</i>							
1903-14	47	29	15	3	44	0	3
1915-24	32	25	4	3	27	2	3
1925-34	27	23	4	0	27	0	0
1935-44	32	30	1	1	31	0	1
1945-54	33	28	4	1	31	1	1
1955-64	55	54	1	0	53	2	0
1965-74	86	86	0	0	85	1	0
1975-84	121	115	5	1	119	1	1

During 1969-1984, 3327 marriages were registered in the four parishes, of which, 3,081 bridegrooms and brides (93 per cent) were "first" time united in wedlock, 152 widowers married spinsters (type I remarriage), 52 widows married bachelors (type II remarriage) and 42 widowers wedded widows (type III remarriage). In other words, 194 widowers and 94 widows were remarried during the period under investigation.

Age at second marriage for widowers and widows are presented in Table 4 for the four parishes under the above three remarriage types.

TABLE 4

Distribution of widowers and widows, by age at second marriage

Period	No. of persons married for the second time at ages					Total
	24	25-29	30-34	35-39	40+	
<i>1875-84</i>						
Males			2		2	4
Females		3		1		4
<i>1905-14</i>						
Males				1	3	4
Females	2			1	3	4
<i>1915-24</i>						
Males				2	1	3
Females	1	1	1			3
<i>1935-44</i>						
Males			5		6	11
Females	3	5	1	1	1	11
<i>1945-54</i>						
Males			1	1	6	8
Females	1	2	1	3	1	8
<i>1955-64</i>						
Males				1	4	5
Females		1	3		1	5
<i>1965-74</i>						
Males					3	3
Females					3	3
<i>1975-84</i>						
Males				1	3	3
Females	--	2		1	1	3

TABLE 5  
Distribution of widower—widow remarriages by age at second marriage

A. Males													
Age at 2nd marriage (years)	1869-74	1875-84	1885-94	1895-1904	1905-14	1915-24	1925-34	1935-44	1945-54	1955-64	1965-74	1975-84	Total
19	—	1	—	—	—	—	—	—	—	—	—	1	2
20-24	—	—	—	—	5	1	—	1	—	—	—	—	7
25-29	—	—	2	1	4	2	3	2	5	3	2	—	24
30-34	2	1	—	—	2	1	1	7	4	5	5	5	33
35-39	2	1	—	2	1	1	1	9	8	3	4	5	37
40+	1	—	—	1	3	1	1	6	11	9	7	9	49
Total	5	3	2	4	15	6	6	25	28	20	18	20	152
B. Females													
Age at 2nd marriage (years)	1869-74	1915-24	1925-34	1935-44	1945-54	1955-64	1965-74	1975-84	Total				
24	1	1	1	—	1	2	—	—	6				
25-29	—	—	—	2	3	3	2	3	13				
30-34	—	1	—	2	4	4	7	2	20				
35-39	—	—	—	—	—	4	—	3	7				
40+	—	—	—	1	—	—	1	4	6				
Total	1	2	1	5	8	13	10	12	52				

Note: This includes two types of remarriages (a) Widower-spinster marriage (remarriage of one partner) (b) Widow-bachelor marriage (remarriage of one partner)

An interesting feature emerging from the analysis is that remarriages were prevalent among Roman Catholics even in the nineteenth century. Surprisingly, the percentage of second marriage among males (widowers) was as high as 33 per cent in 1969-74, declined to 15 in 1925-34, 4 in 1955-64 and 2 in 1975-84. Among widows, this percentage was 7 in 1869-74, declined 2 in 1925-34 and remained constant at 1 per cent after 1955. Thus, remarriage among males and females showed a continuous decline indicating that the age at first marriage and the age at widowhood increased steadily among Roman Catholics in the recent periods. It is possible that improvements in the health conditions contributed to increased longevity among males and females, thereby reducing the number of widowers and widows at early ages. The age at widowhood can be inferred from data on age at second marriage. For instance, between 1905 and 1914, 60 per cent of the widowers married between 20-29 years, whereas this percentage was almost zero during 1975-84. Among females, 50 per cent of the widows married between 20-24 years of age but this percentage was close to zero in the recent past (1975-84).

Table 5 provides the age at second marriage of widower-widow remarriages among Roman Catholics in the selected parishes. It reveals that age at second marriage (remarriage) of widowers was always higher than that of widows. This is because of the age difference that has always existed between the bridegroom and bride at the time of their first marriage. A detailed investigation into the data shows that in the recent past, age at widowhood for males was between 35-39 years and for females, it was 30-34 years. However, this calls for further investigation as the parish records did not contain any information on the number of years the couples had lived together in fertile union or when one partner lost his/her life partner. Surprisingly, during the last 115 years (1869-1984), not a single case of third marriage was registered among Roman Catholics belonging to these parishes.

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## APPENDIX 1

Mean age at first marriage for selected parishes in the archdiocese of Bombay

## A. Kurla: Males and Females

Age at Marriage (Years)	Males					Females				
	1935-44	1945-54	1955-64	1965-74	1975-84	1935-44	1945-54	1955-64	1965-74	1975-84
10	0	0	0	0	0	0	0	0	0	0
10-14	0	0	0	1	0	0	3	.0	1	1
15-19	9	6	1	2	1	78	64	80	81	38
20-24	52	68	69	82	71	47	128	154	194	225
25-29	42	75	115	154	195	17	27	67	85	174
30-34	18	37	97	92	157	2	4	18	20	45
35-39	8	23	33	38	56	1	3	8	8	14
40+	2	6	11	16	16	0	0	3	3	2
Total	131	215	326	385	496	147	229	326	392	499
Mean	26.35	27.99	28.42	29.15	29.96	20.53	21.93	23.39	23.49	25.25

## B. Chembur: Males and Females

Age at marriage (years)	Males			Females		
	1949-64	1965-74	1975-84	1949-64	1965-74	1975-84
10	0	0	0	0	0	0
10-14	0	0	0	0	0	0
15-19	1	0	0	14	25	33
20-24	10	20	35	45	103	211
25-29	45	92	200	50	74	185

## APPENDIX I (Contd.)

## B. Chembur: Males and Females (Contd.)

Age at marriage (years)	Males				Females			
	1949-64	1965-74	1975-84		1949-64	1965-74	1975-84	
30-34	44	85	189		10	24	49	
35-39	15	26	45		4	4	11	
40+	7	14	25		0	6	5	
Total	122	237	494		123	236	494	
Mean	30.90	30.85	30.73	25.26	25.32	25.57		

## C. Manikburi: Males

Age at Marriage (years)	1869-74	1875-84	1885-94	1895-1904	1905-14	1915-24	1925-34	1935-44	1945-54	1955-64	1965-74	1975-84
10	0	0	0	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	1	0	1	0
15-19	0	2	4	2	0	0	1	1	1	0	2	0
20-24	8	2	5	2	4	2	4	7	5	3	1	22
25-29	1	4	0	2	2	2	5	5	6	17	26	47
30-34	1	3	1	1	1	0	1	1	4	13	27	30
35-39	0	1	0	0	0	0	1	1	0	2	8	13
40+	0	0	0	0	0	0	0	0	1	2	2	8
Total	10	12	10	7	7	4	12	15	18	37	85	120
Mean	24.00	27.08	21.50	23.93	25.36	25.00	26.25	25.50	26.67	30.20	28.85	29.92



## APPENDIX 1 (Contd.)

## C. Mankhurd: Females (Contd.)

Age at marriage (years)	1869 -74	1875 -84	1885 -94	1895- 1904	1905 -14	1915 -24	1925 -34	1935 -44	1945 -54	1955 -64	1965 -74	1975 -84
10	0	0	0	0	0	0	0	0	0	0	0	0
10-14	2	2	3	0	0	0	0	0	0	0	1	0
15-19	11	8	9	8	5	3	10	15	8	12	26	17
20-24	1	4	0	3	2	3	3	2	9	17	36	52
25-29	0	1	0	0	0	0	0	1	3	9	19	39
30-34	0	0	0	0	0	0	0	0	0	1	5	7
35-39	0	0	0	0	0	0	0	0	1	1	2	5
40+	0	0	0	0	0	0	0	0	0	0	0	1
Total	14	15	12	11	7	6	13	18	21	40	89	121
Mean	17.14	18.83	16.25	18.86	18.93	20.00	18.65	18.61	22.02	22.75	22.89	24.77

## D. Marouli: Males

Age at marriage (years)	1903 -14	1915 -24	1925 -34	1935 -44	1945 -54	1955 -64	1965 -74	1975 -84
10	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0
15-19	12	5	5	3	1	1	0	0
20-24	13	12	11	9	8	15	10	15
25-29	4	5	6	13	11	19	36	43

## APPENDIX 1 (Contd.)

## D. Marouli: Males (Contd.)

Age at marriage (years)	1903 -14	1915 -24	1925 -34	1935 -44	1945 -54	1955 -64	1965 -74	1975 -84
30-34	0	3	1	2	6	16	22	39
35-39	0	0	0	3	1	2	12	10
40+	0	0	0	0	1	1	7	8
Total	29	25	23	30	28	54	86	115
Mean	21.12	23.70	23.15	26.33	27.68	28.06	30.70	30.46

## D. Marouli Females

Age at marriage (years)	1903 -14	1915 -24	1925 -34	1935 -44	1945 -54	1955 -64	1965 -74	1975 -84
10	0	0	0	0	0	0	0	0
10-14	6	2	2	0	0	0	0	0
15-19	31	21	22	17	14	14	10	10
20-24	7	4	3	8	15	32	54	55
25-29	0	0	0	4	1	5	16	35
30-34	0	0	0	1	0	2	3	14
35-39	0	0	0	1	1	0	1	1
40+	0	0	0	0	0	0	1	4
Total	44	27	27	31	31	53	85	119
Mean	17.61	17.87	17.69	21.20	20.89	22.03	23.62	25.52

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## ERRATUM

The article entitled "Nehru's Vision of Women, Development and Family Planning" by Air Vice Marshal (Retd.) E. S. Lala, which appeared in the December 1989 issue (Vol. 35, No. 6 pp. 3-9) of THE JOURNAL OF FAMILY WELFARE, was an oration delivered at a seminar on "Women's Development and Planned Parenthood" organised by the Family Planning Association of India in Srinagar from 29th to 31st August 1989, and not on the theme "Women's Development and Family Planning" held on 29th August to 31st September 1989, as mentioned in the footnote to the article.

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# **WORK PATTERN OF WOMEN AND ITS IMPACT ON HEALTH AND NUTRITION—SOME OBSERVATIONS FROM THE URBAN POOR**

**DR. M.E. KHAN\***  
**MR. A.K. TAMANG**  
**and**  
**Ms. BELLA C. PATEL**

## **Introduction**

Studies on the pattern of time allocation (work pattern) by women and men among rural households in India though few, indicate that rural women work longer hours than men<sup>1</sup> and that women put in the same number of hours but expend more total energy in the task they do<sup>2</sup>. Some studies that have examined women's work alone find that a 14-16 hour working day is common in certain areas even among pregnant women<sup>3</sup>. Carefully undertaken time allocation studies in other Asian countries too support the view that women and female children usually work longer hours than do men and male children<sup>4-7</sup>.

A quick review of the literature, however, shows major gaps in information and many unanswered questions. For example, there is neither precise information on the work pattern of women in rural India and among the urban poor nor do we have definite answers to questions like, how the work load of the woman is related to her nutritional status or that of her children; whether her increased participation in cash generating activities helps her in improving the food intake or the quality of food of the household and thereby her own nutritional status and that of her children. It is also not clear whether woman's coming out for work increases her work load or how the introduction of new technologies (like switching to high yielding varieties in farming, adoption of consumer items like pressure cookers, new and efficient stoves, bio-gas, or the availability of a tap or hand pump etc., as a source of water near the house) affects her time use pattern. Similarly, it is of interest to know how the quality and quantum of child care is affected by the increasing participation of women in the paid labour force or a increase or decrease in her work load. Obtaining answers to these questions are important as the information could be of significant use in developing national nutritional policies and establishing inter-sectoral linkages, particularly among agencies respon-

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sible for the development of women and the well-being of children. The present paper is an attempt in this direction.

### **Data**

The present paper is based on data collected in a major multi-centric study entitled "Study on Work Pattern of Women and its Impact on Health and Nutrition" sponsored by the Indian Council of Medical Research. Apart from the Operations Research Group (ORG), four other research institutions participated in this study. The findings of the present study are based on ORG data which covered the slums of Baroda city.

The study covered a total of 800 currently married women with at least one child aged 5 years and below, of which 600 were selected from various categories working for cash or kind, and the remaining 200 were housewives. All women who were working for cash or kind including those who were self-employed were considered as 'working women'. Women working as unpaid family workers were grouped along with housewives. Because of the low level of female participation in paid labour, 114 slum pockets spread over various parts of Baroda city were surveyed in order to register 600 working women. In the process altogether 15,748 slum households consisting of 75,490 persons were covered. In the sample, 2501 or 3.3 per cent were identified as working women. Of these, 12.4 per cent were in their reproductive years (15-45). The total index mothers, or those working women who had at least one child aged 5 years or below numbered 785, of which 597 could be interviewed.

Each of the selected households was visited by a trained female investigator and a detailed interview schedule consisting of various dimensions of family life was administered. Because of the details and time required to complete the schedule, it often took a number of sittings to complete an interview. The topics covered included: the socio-economic background of the respondents; their work pattern and time disposition; their health seeking behaviour; details of sickness; anthropometry measurements and signs of nutritional deficiency; breastfeeding status; and consumption, expenditure and sources of income.

Apart from these, a sub-sample of 150 working women and 50 housewives were randomly chosen to carry out a detailed dietary survey. The dietary survey was carried out by lady investigators with a post-graduate degree in Nutrition. These 200 households were also included in the present analysis in addition to 50 housewives who were added on to increase the sample size. The present paper is confined to a discussion of the findings of the sub-sample of 150 working women and 100 housewives. The detailed analysis of the total sample (797 women) is yet to be finalised.

## Results and Discussion

The findings have been presented in three parts. The first part looks into the differences in work pattern between a working woman and a housewife, and the time disposition of various activities. The two groups of respondents have been also been compared with respect to their food intake, nutritional deficiencies and utilisation of MCH services. The second part focusses on the impact of women's work on quality of child care and development—an attempt has been made to compare time disposition by women with regard to child care, those substituting as mothers for the care of the child when the woman goes out to work, nutritional intake and deficiencies, and incidence of sickness among children of working mothers and housewives. The third part discusses the significance of the findings and its policy relevance.

### *Women's Contribution to Household Income*

A comparison of the total family income of the households with and without working women showed that both types of households had similar economic status—among households with working women, 42 per cent had a monthly income of Rs. 500 or less and about 49 per cent were in the income bracket of Rs. 501-1000. The corresponding figures for households with non-working women were 43 and 46 respectively. The mean family income of households with working women was estimated to be Rs. 585 ( $SD = \pm 320$ ) as against Rs. 597 ( $SD = \pm 350$ ) for those with housewives. The difference in mean household income was statistically not significant.

Further analysis showed that the contribution of working women to family income was crucial for family survival. This, to some extent, is reflected in Table 1 which presents the proportion of total household income contributed by women. It is evident from the table that about half of the women were contributing 25-50 per cent of the total household income. Nine women (6 per cent) were in fact bearing the total economic burden of the family. This shows that if these women would not have contributed financially to the family income, their economic situation would have been worse than that of families with non-working women.

### *Work Pattern and Time Disposition of Women*

The "activity approach" was used to collect time use data. According to this, the investigator reads out a list of activities which are identified as being important prior to the survey to the respondent to indicate which of these activities were performed yesterday, last week and during the last twelve months and for what duration, frequency and regularity. The amount of time spent on a particular activity is estimated on the basis of the number of hours of work done when the activity is performed in a typical day. Details of the

TABLE 1

## Contribution of working women to the total family income (% distribution)

% contribution to family income	Working women			Total working women
	DW	WO	WI	
< 25%	61.5	27.5	22.2	45.3
25-50%	36.1	52.5	66.7	46.0
51-75%	1.2	7.5	—	2.7
76-90%	—	—	—	—
< 91%	1.2	12.5	11.1	6.0
(N)	83	40	27	150
Mean contribution	23.1	39.7	38.3	30.3
SD (+)	15.0	25.2	23.6	21.2

DW = Domestic workers, WO = Working outside house

WI = Working inside house

methodology have been reported by Khan et al.<sup>8</sup> Table 2 gives a comparative picture of the work pattern of working women and housewives.

As the table shows except for their income generating activities, the work pattern of working women and housewives was quite similar. Women of both groups participated in various household activities and child care. However a closer look into the table reveals that the percentage of the women performing certain household activities such as food processing, cleaning dishes, fetching water and feeding children was slightly lower among working women than among housewives.

It is important to note that the time disposition of both groups of women for various household activities was not significantly different. In other words, women who participated in income generating activities continued to carry out their household chores and as a result they spent more time on work than did housewives. This is clearly evident from Table 3 which presents the average time disposition of working women and housewives on different work activities. It can be observed from the table that the average daily-time disposition of working women for work (excluding self care, leisure and sleeping) was around 11 hours and 36 minutes as against 9 hours and 09 minutes for housewives. In other words, a working woman spent about 2.5 hours more on work than did the housewife. The average time spent by all categories of working women (including those working inside the house) on income generating activities was 4 hours and 06 minutes; the corresponding figure for women working outside the house was about 6 hours (mean—5 hours 44 minutes).

TABLE 2

## Work pattern and time disposition of working women and housewives

Work pattern	Working outside the house				Working inside house		Total working		Housewives	
	Domestic workers		Other workers							
	% W	X *	% W	X *	% W	X *	% W	X *	% W	X *
	Hr Min.		Hr Min.		Hr Min.		Hr.Min.		Hr.Min.	
(N)	(83)		(40)		(27)		(150)		(100)	
<i>Household Activities</i>										
Food processing	90.4	0.37	82.5	0.32	88.9	0.41	88.0	0.37	97.0	0.39
Cooking & serving	97.6	1.53	92.5	1.53	100.0	1.51	96.7	1.52	99.0	1.58
Cleaning dishes	91.6	0.36	85.0	0.39	96.3	0.36	90.7	0.37	97.0	0.43
Fetching water	89.2	1.22	85.0	1.39	88.9	1.28	88.0	1.3	95.0	1.45
Washing clothes	97.6	0.46	90.0	0.49	92.6	0.36	94.7	0.44	95.0	0.49
Collecting fuel	1.2	0.10	0.0	—	3.7	1.00	1.3	0.23	3.0	0.08
Buying firewood	34.9	0.13	37.5	0.19	18.5	0.13	32.7	0.15	33.0	0.23
Household cleaning	90.4	0.29	90.0	0.32	96.3	0.39	91.3	0.33	98.0	0.41
Marketing	55.4	0.26	40.0	0.31	3.7	0.28	48.0	0.28	51.0	0.24
Making/Stitching clothes	22.9	0.26	7.5	1.00	22.2	0.21	18.7	0.36	21.0	0.25
<i>Child care</i>										
Bathing/Dressing	94.0	0.36	95.0	0.38	96.3	0.34	94.7	0.36	97.0	0.42
Feeding children	73.5	1.39	75.0	1.32	59.3	1.49	71.3	1.4	86.0	2.04
<i>Economic activities</i>										
Dairy/Poultry	9.6	0.42	—	—	14.8	0.22	8.0	0.21	4.0	0.12
Non-agr. activities	90.4	4.24	57.5	5.44	11.1	5.00	67.3	5.03	—	—
Business	—	12.5	4.36	66.7	5.58	15.3	3.31	—	—	—
<i>Leisure</i>										
Religious activities	72.3	0.15	72.5	0.12	70.4	0.18	72.0	0.15	69.0	0.13
Leisure time	63.9	1.15	52.5	1.49	59.3	1.18	60.0	1.27	85.0	1.48
<i>Self Care</i>										
Eating	98.8	0.38	100.0	0.44	100.0	0.39	99.3	0.4	100.0	0.46
Sleeping (day)	41.0	0.47	52.5	1.06	70.4	1.08	49.3	1	76.0	1.19
Bathing	98.8	0.18	100.0	0.17	100.0	0.17	99.3	0.17	100.0	0.17
Sleeping (night)	100.0	7.51	100.0	7.37	100.0	7.24	100.0	7.37	100.0	7.49

For calculating the percentages, only those who had performed the specific activities were considered in the denominator.

Table 3 also shows that the working women had adjusted their timing either by reducing some of their household chores or carrying out the same work hurriedly in slightly less time. They spent less time on child care and were forced to reduce their leisure time or the time spent on self care. However, the average duration of sleeping time for both working women and housewives was equal. Thus, the findings show that working women are doubly burdened as they have to participate in income earning activities as well as look after their household chores. They are therefore not able to give enough time to their children. Similarly, they get less leisure time and time for self care.

TABLE 3

Average time disposition per day of working women and housewives

	Average time in Hrs. Mins.	
	Working women	Housewives
Household activities	5.46	4 49
Child care	1.44    11.36	2 20
Economic activities	4.06*	—
Leisure	1.01	1 41
Self care	1.26	2.03
Sleeping (night)	7.46	7.49
(N)	150	100

\* Women working outside the house spend on average 5.44 minutes

It may be noted that the time disposition reported by the respondents did not add up to 24 hours. In the case of working women, it added up to 21.5 hours while for housewives it added up to 20.4 hours. Such under-reporting is typical of time use collection data. The difference among working and non-working women could be due to the fact that the time disposition of working women is more scheduled and therefore, they perhaps have a better concept of time than housewives.

### *Nutritional Intake of Mothers*

As indicated earlier, as a part of the study, a dietary survey of this sub-sample under study was also carried out. Of these 200 households, 150 were randomly selected from households with working women and the remaining 50 from those with housewives. On the basis of the dietary survey, the nutrition intake of both mothers and children aged 5 years and below was estimated, and has been presented in Table 4.

Both working women and housewives received significantly less than the required nutritional intake or RDA, recommended by ICMR\*. The only ex-

TABLE 4

Percentage of nutritional intake of working women and housewives against the recommended dietary allowance (RDA)

Intake of	Working women	Housewives	t value
Protein	78.4	84.2	1.06
Fat	73.3	70.0	0.31
Carbohydrates	65.6	86.9	3.36*
Calorie	66.9	84.0	2.70 *
Calcium	59.0	55.6	0.43
Iron	52.2	86.6	0.39
Vitamin A	17.0	12.5	0.73
Vitamin B1 (Thiamin)	105.4	127.0	2.50
Vitamin B2 (Riboflavin)	50.8	64.5	1.72
Vitamin B3 (Niacin)	75.3	160.0	5.85*
Vitamin C	47.5	101.5	11.25
(N)	150	50	

\* Significant at 5% level of significance.

ception was the intake of Vitamin B1 in case of working women and Vitamins B1, B3 and C in case of housewives.

A comparison between the two groups further revealed that the situation was much worse among working women as the nutritional intake among them was considerably less than that of their non-working counterparts. For example, the protein intake of working women was 78.4 per cent of the RDA as against 84.2 per cent among housewives. The difference was still wider in the case of caloric intake which was reported to be about 67 and 84 per cent of the RDA respectively. A similar difference was observed in the intake of carbohydrates and Vitamins B1, B2, B3 and C. In all these cases, the difference was statistically significant ( $p < .05$ ).

#### *Prevalence of Clinical Signs of Nutritional Deficiency*

Table 5 presents the nutritional deficiencies observed during the clinical examination of the respondents. The results are equally disturbing and show the prevalence of various types of nutritional deficiencies both among working women and housewives. The more frequently observed clinical signs were anemia, conjunctival xerosis, mottled enamel and dental caries. The findings also showed that working women were much worse off than housewives. For example, 47 per cent of the working women as against 22 per cent of the housewives were anaemic and the difference was statistically significant ( $t = 2.21$ ,  $p < .05$ ). A similar difference was observed in case of dental caries and mottled enamel indicating a lower intake of calcium and Vitamin D by

a larger proportion of working women. However, it was statistically significant only in case of mottled enamel ( $t = 2.78$ ,  $p < .05$ ). Two clinical signs viz. Bitot spot and glossitis was observed to be slightly higher among housewives than among working women.

TABLE 5

Percent prevalence of clinical signs of nutritional deficiency among working women and housewives

Clinical signs	Working outside house		Working inside house	Total working women	% housewives	t value
	Domestic worker	Other women				
Anemia	53.0	37.5	44.4	47.3	22.0	4.31**
Conjunctival Xerosis	48.2	37.5	25.9	41.3	28.0	2.21*
Night blindness	9.6	7.5	11.1	9.3	5.0	1.36
Bitot spot	21.7	20.0	18.5	20.7	27.0	1.15
Angular Stomatitis	—	2.5	—	0.7	3.0	1.28
Cheilosis	1.2	2.5	—	1.3	3.0	0.89
Glossitis	3.6	2.5	3.7	3.3	7.0	1.28
Pellagra	4.8	12.5	3.7	6.7	8.0	0.38
Dental carries	62.7	65.0	70.4	64.7	57.0	1.28
Mottled enamel	71.1	77.5	70.4	72.7	56.0	2.78*
(N)	83	40	27	150	100	

\* Significant at 5% level of significance

\*\* Significant at 1% level of significance

The observation that a larger number of working women had more nutritional deficiencies is also reflected from Table 6 which presents the number of nutritional deficiencies identified in each woman. As can be seen, only 5 per cent of the working women as against about 14 per cent of housewives had no sign of any nutritional deficiency. The difference was statistically significant ( $t = 2.45$ ,  $p < .05$ ).

Similarly, women who had shown four or more signs of deficiencies were 31 per cent in the case of working women as against 19 per cent among housewives ( $t = 2.28$ ,  $p < .05$ ). The mean number of deficiencies observed among the working women was 2.8 as compared to 2.2 among the housewives. The difference was statistically significant ( $p < .05$ ). Thus, both Tables 5 and 6 clearly indicate that working women had more nutritional deficiencies than the housewives. This perhaps could be a consequence of her longer and intensive working hours (11 hours and 40 min.) as compared to those of the housewife (9.0 hours and 9 min.) compounded by lower caloric intake (67% of the RDA).

TABLE 6

**Incidence of nutritional deficiencies among working women and housewives**

Number of nutritional deficiencies observed	Working women (%)	Housewives (%)	t value
0	4.7	14.0	2.45*
1	14.7	20.0	1.06
2	27.3	26.0	0.23
3	22.0	21.0	0.18
4	31.3	19.0	2.28*
Mean	2.8	2.2	2.2*
S.D.	1.2	1.3	
(N)	150	100	

Significant at 5 per cent level of significance

*Utilisation of Antenatal Services*

It is generally believed that if women participate in the paid labour force, and particularly, if they work outside the house, they are relatively more independent and their accessibility to various social services including health care is relatively better as compared to a housewife. In the present paper an attempt was made to check how far these assumptions are correct. In the absence of detailed data on decision making processes etc. the analysis is confined to a comparison of the utilisation of health care services particularly during pregnancy by the two groups of women. The findings are presented in Table 7.

TABLE 7

**Antenatal care received during last pregnancy by working women and housewives**

Services/care received	Working women (%)	Housewives (%)	t value
Some ante-natal check up	82.7	71.0	2.1 *
Iron/folic acid	68.7	55.0	2.19*
Two doses of TT	70.0	60.0	1.62
Blood test	66.0	60.0	0.96
Urine test	62.7	59.0	0.59
N =	150	100	

Significant at 5% level of significance.



The findings indicate that a higher proportion of women receiving antenatal care, particularly a medical check up, vitamin tablets or two doses of tetanus toxoid were working rather than non-working. Some marginal difference was also observed in case of routine examinations (urine and blood tests). The two groups differed significantly with respect to antenatal check up and in receiving iron and folic acid tablets, but not in case of other antenatal services. Considering all the parameters of antenatal care, working women appeared to utilise more antenatal services than housewives.

Further probing into the source from where the two groups sought antenatal services showed that the majority (55 to 60 per cent) of the women from both the groups had availed of the services from government clinics or hospitals (Table 8).

TABLE 8

Percent distribution of women by source utilised for ante-natal care

Source	Working outside house		Working inside house	Total working	House-wife	t value
	Domestic workers	Other workers				
Did not use any source	21.7	12.5	18.7	11.1	17.3	29.0
Govt./Public Hospital	57.8	60.0	58.5	66.7	60.0	55.0
Private hospital/clinic	18.1	27.5	21.2	14.8	20.0	12.0
Anganwadi worker	2.4	—	1.6	7.4	2.7	4.0
(N)	83	40	123	27	150	100

t value is for total working women and housewives

\* Significant at .5 per cent level of significance

However, a greater proportion of working women depended on private clinics for antenatal services (20 per cent) than housewives (12 per cent). The difference was statistically significant ( $t = 2.0$ ,  $p < 0.5$ ). It is interesting to note that even among working women a difference prevailed between those who worked outside (domestic work/maid servants and other service workers) and inside the house. For example, 21 per cent of the women working outside the house, as against 15 per cent working inside the house sought assistance from private clinics during their pregnancies. It is possible that those women who were working outside had relatively easier access to private clinics than those who were confined inside the house, irrespective of their working status.

## Quality of Child Care

### *Time Disposition of Mothers for Child Care*

As discussed earlier, working mothers were not able to give as much time as housewives to their children. The average time spent on child care by a working woman was 1 hour 44 minutes as compared to 2 hours 28 minutes devoted by a housewife (Table 2). It is significant to note that child care activities that were curtailed as a result of undertaking economic activities concerned feeding time rather than dressing or cleaning children. This is perhaps because the working women had to leave their children at home while they went out for work. This is supported by Table 9, which shows that out of the 123 working women, 93 (78 per cent) were not taking their children to their place of work.

TABLE 9

Feeding status of children by work status of mother and whether or not the child is taken to the work place

Whether children at work place	Breastfeeding status			Total
	SBF	PBF	Weaned	
Housewives & women working inside house	12.6 (16)	52.8 (67)	34.6 (44)	100.0 (127)
Mother working outside home but taking child to place of work	10.0 (3)	56.7 (17)	33.3 (10)	100.0 (30)
Mother working outside house and not taking child to place of work	4.3 (4)	46.2 (43)	49.5 (46)	100.0 (93)
(N)	22	127	101	150

Figures in brackets indicate the number of youngest children in these families

SBF = solely breastfed

PBF = partially breastfed

The findings further show that out of the 93 working women who left their children at home, in 4 cases (4.3 per cent) the child was solely breastfed (SBF), 43 children (46.2 per cent) were partially breastfed (PBF), and in the remaining 46 cases (49.5 per cent), the children were weaned and hence were not dependent on mother's milk. Though the sample size is not adequate it appears that working women who did not take their children to their work place, introduced supplementary foods earlier than those who were either housewives, working inside the house or taking their children to their place of work. Similarly, the former also weaned their children at a relatively early age than the latter ( $t = 1.8$ ,  $p < .05$ ) (Tables 9 and 10). However, there was no marked difference in the breastfeeding status of the children from the two groups (Table 10).

TABLE 10

**Weaning practices among non-working mothers and working mothers who either took or did not take their children to the work place**

Weaning practice	Mothers who did not take child to work place	Mothers working at house, or taking child to work place
% introducing supplementary before six months	33.8 (3)	20.0 (15)
% introducing supplementary food between 7-12 months	88.9 (18)	84.8 (46)
% weaned by 7-12 months	5.5 (18)	0.0 (46)
% Weaned by 13-24 months	14.0 (25)	29.0 (42)
% Weaned by 25+ month of child	83.0 (47)	80.0 (53)

Figures in brackets indicate the total number of children on the basis of which the percentage was calculated

One way to assess quality of child care is to see who looks after the child particularly among those working women who leave their children behind at house. This would also give some idea as to whether these working women get any help from their husbands in child care. The findings of such an analysis are presented in Table 11.

TABLE 11

**Percent distribution of women according to the person who helps the woman in child care\***

Baby care activity	Child remains with mother				Child left at home
	House wife	Working inside home	Working outside but takes child to work place	Total	
<i>Baby sitting</i>					
None	71.0	63.0	60.0	67.5	24.7
Husband	5.0	25.9	3.3	8.3	10.8
Mother-in-law	8.0	7.4	6.7	7.6	17.2
Children	15.0	7.4	16.7	14.0	53.8
Others	8.0	44.4	20.0	16.6	22.6
<i>Feeding</i>					
None	85.0	84.4	83.3	84.0	50.5
Husband	8.0	11.1	—	2.4	6.5
Mother-in-law	7.0	3.7	3.3	5.7	11.8
Children	8.0	—	6.7	6.4	30.1
Others	8.0	3.7	6.7	3.2	10.8
(N)	100	27	30	157	93

\* The percentages add up to more than 100 because of multiple responses.

As is evident from the table the persons who substituted for the mothers were often not the best substitute one would like to have. For example, the sibling of the index child (usually the elder sister) was responsible for baby sitting (54 per cent) and feeding (30 per cent). And worse, as many as one-fourth (24.7 per cent) of the children were not cared for at all during the mother's absence, and half of them had no one to feed them. The mother-in-law fed or looked after the child in only 12 to 17 per cent of the cases, while the husband helped baby sit (11 per cent) or feed the child (6.5 per cent) in some cases. This shows that even women who work outside the house do not get much assistance from their husbands in raising children.

A comparison of these women with those where the index child remained with the mother (e.g. housewives, women working inside the house or women taking the child with them) showed that in the majority of cases, baby sitting (68 per cent) and feeding (84 per cent) was done by the mothers themselves. Baby sitting by the sibling was reported only by 14 per cent of the women.

#### *Caloric Intake of Pre-school Children*

The caloric intake of pre-school children of both working women and housewives measured against the recommended dietary allowance indicated that the diet of only about 12 per cent of the children of working women was normal as compared to 30 per cent of that of housewives. In other words, the caloric intake of about 88 per cent and 70 per cent of the children of working women and housewives respectively was below normal. The difference between the two groups of children was statistically significant ( $X^2 = 15.2$ ;  $p = < .01$ ;  $t = 3.43$ ,  $p < .01$ ).

#### *Prevalence of Clinical Signs of Nutritional Deficiency among Children*

Table 12 presents the prevalence of various nutritional deficiencies observed during the clinical examination of the pre-school children of both working women and housewives. The percentage of children having one or the other signs of nutritional deficiency was slightly higher among children of working women than those of housewives. This difference was observed to be greater in case of marasmus, Bitot spot, knock knees, and mottled enamels, indicating thereby that relatively more children from families with working mothers as compared to those with non-working mothers suffered from deficiencies of protein/calories, vitamins (especially Vitamins A and D) and calcium.

Though the mean number of deficiencies among the children from the two groups did not differ significantly ( $t = 1.04$ ), a higher percentage of children with no sign of deficiency was observed among the group of housewives (43.3 per cent) than among that of working women (35.0 per cent;  $t = 1.57$ ,  $p < .05$ ) (Table 13). Again, the percentage of children with three or more nutritional deficiencies was greater among the children of work

TABLE 12

**Prevalence of clinical signs of nutritional deficiency among pre-school children of working women and housewives**

Clinical signs	% children of working women			% children of housewives			t value
	Male	Female	All	Male	Female	All	
Moon face	3.5	4.0	3.7	1.2	5.6	3.2	0.25
Marasmus	23.5	28.3	25.7	14.5	30.6	21.9	1.00
Conjunctival xerosis	12.2	1.0	7.0	7.2	5.6	6.4	0.23
Bitot spot	8.7	10.1	9.3	3.6	2.8	3.2	2.55
Angular Stomatitis	0.9	Nil	0.5	4.8	Nil	2.6	1.62
Cheilosis	1.7	Nil	0.9	1.2	1.4	1.3	0.40
Glossitis	2.6	1.0	1.9	2.4	nil	1.3	0.60
Knock knees	35.6	40.4	37.8	32.5	27.8	30.3	1.68
Dental Caries*	19.5	19.3	19.5	15.1	16.2	15.6	1.00
Mottled enamel*	32.7	26.9	30.0	15.1	22.1	18.4	2.68
(N)	115 (107)	99 (93)	214 (200)	83 (73)	72 (68)	155 (141)	

\* While calculating the percentages for these groups, only those children having teeth were considered; their numbers are given in brackets.

ing women (19.2) than of housewives (11.0). The difference was statistically significant ( $t = 2.27, p < .05$ ). When this exercise was carried out by regrouping the women on the basis of their being separated from their child on account of their having to work outside the house (as in Table 10), no significant difference was observed between the two groups.

TABLE 13

**Percent distribution of male and female pre-school children by number of nutritional deficiencies detected: Working women vs. housewives**

No. of nutritional deficiencies detected	Working women			Housewives			t value
	Male child	Female child	Total	Male child	Female child	Total	
0	31.3	39.4	35.0	48.2	37.5	43.3	1.57
1	27.8	19.2	23.8	26.5	30.5	28.3	0.98
2	20.9	23.2	22.0	15.7	19.5	17.4	1.09
3+	20.0	18.2	19.2	9.6	12.5	11.0	2.27
(N)	115	99	214	83	72	155	
Mean	1.40	1.3	1.29	1.21	1.19	1.16	
SD (+)	1.31	1.2	1.23	1.22	1.21	1.20	

A sex-wise comparison of the findings within the group did not show any major difference, yet, the signs of marasmus were more prevalent among female children (30.6 per cent) than among male children (14.5 per cent) of housewives. A similar difference was observed among the children of working women though the gap was relatively less (23.5 for male children as against 28.3 for female children) (Table 13).

Data collection on weight-for-age and height-for-age did not show any difference by nutritional status. An analysis of the data on weight-for-age showed that practically all the children were underweight. According to the Gomez\* classification, about 86 per cent of the children of both the groups were moderately or severely under-weight. Similar data on height-for-age showed that 85 per cent of the children were either normal (15 per cent) or mildly stunted (i.e. measured more than 75 per cent of the standard height: Harvard Standard\*\*).

### *Incidence of Sickness*

An attempt was made to measure the incidence of sickness among the children of the two groups of women. For this purpose, the total number of sicknesses suffered by the children during the preceding one month from the date of survey was noted and analysed. The rate of sickness as measured in terms of total number of episodes was quite high among children of both groups of women, though it was higher (0.78) among children of working women than among children of housewives (0.64), the difference being statistically significant ( $t = 2.32$ ,  $p < .05$ ). Within the same group, the incidence of episodes was higher among female than male children (0.80 and 0.75 respectively for the working group and 0.68 and 0.60 for the non-working group). A higher incidence of sickness among children of working women was also apparent from the fact that out of 214 children, 137 (64.1 per cent; 60.0 per cent male and 67.7 per cent female) had fallen sick during the preceding one month from the date of survey. As against this, out of 155 children of non-working women, 78 (50.3 per cent; 44.6 per cent male and 56.9 per cent female) had fallen sick during the same period.

An analysis of the type of sickness revealed that the common sicknesses were cold and cough, fever and diarrhoea. In about one-tenth of the cases, skin diseases was also reported. No significant difference was observed in

\* Categories of Gomez Classification taken from "Diet and Nutrition in Urban Areas" by N P. Rao, T. Ramnath and J.G. Shastri, Proceedings of the Nutrition Society of India, National Institute for Nutrition, Hyderabad, 1986.

\*\* The Harvard Standard follows the 50th percentile data from studies of child health development conducted by the Department of Maternal and Child Health, Harvard School of Public Health. See "Essentials of Foods and Nutrition" Vol. 1 by M. Swaminathan, Ganesh & Company, 1984.

the type of sicknesses reported by the two groups of women.

Further analysis by regrouping the women on the basis of their being separated from their children during their working hours outside the house indicated that the frequency of sickness among children who were left at home was much higher as compared to that exhibited by those who remained with their mothers (Table 14). The average number of sickness in the former case was 1.03 as compared to 0.75 in the latter group. The difference was statistically significant ( $t = 4.7$ ,  $p < .01$ ).

TABLE 14

Number of episodes of sickness among children of non-working mothers and working mothers who either take or do not take their children to the work place

Number of episodes of sickness	Mothers who do not take child to work place	Housewives, mothers working at house, or taking child to work place	t value
0	9.1	43.0	6.07**
1	79.1	39.0	8.00**
2	11.8	18.0	1.2
(N)	153	244	
Mean	1.03	0.75	4.7**
SD ( $\pm$ )	+ 0.46	0.74	

\*\* Significant at one per cent level of significance

### Immunisation Status

Table 15 presents the immunisation status of children aged 5 years and below. It is encouraging to note that in both the groups, most of the children had been immunised and no difference was observed in the immunisation status of children belonging to working women and housewives.

Further analysis by sex revealed that among the housewives, a slightly larger proportion of male as compared to female children had been immunised. However, the difference was not significant (t value ranged between 1.4 to 1.7). It is interesting to note that a similar difference was observed among working women but in the reverse direction i.e. a slightly higher percentage of female rather than male children were immunised. A comparison of the proportion of female children immunised in the two groups showed that though the difference was not statistically significant ( $t = 1.7$  or  $1.8$ ;  $p < .10$ ) the percentage was consistently higher among female children of working women as compared to those of housewives. Perhaps, this indicates an absence of sex bias among working women.

TABLE 15

Distribution of children aged 0-5 years of working women and housewives by sex and immunisation status

	% given polio vaccine				% given DPT				% given BCG
	1st dose	2nd dose	3rd dose	Booster dose	1st dose	2nd dose	3rd dose	Booster dose	
<i>Housewives</i>									
Male	90.4	88.0	83.4	71.2	90.4	88.0	86.4	71.2	92.0
Female	80.8	79.5	72.2	72.2	80.8	79.5	79.2	72.2	94.6
<i>Working women</i>									
Male	88.3	86.4	83.6	73.5	89.2	86.4	83.6	72.4	86.4
Female	90.0	89.1	89.0	72.1	90.0	89.1	88.1	67.4	87.1

### Summary and Conclusion

The present paper attempts to answer a number of questions which have immediate relevance to policy makers and programme managers responsible for social development, particularly that concerning women and children. The paper, based on a detailed survey conducted in the slums of Baroda city, of the work pattern and time disposition of working women and housewives belonging to same economic group (that is, with similar total family income), indicated that more than half of the working women were contributing about 25-50 per cent of the total family earnings. It also reveals that those who participated in the paid labour force, and particularly those who worked outside their houses, are doubly burdened by household chores as well as their income generating activities. The working woman on average spent 12-13 hours per day as compared to about 9 hours put in by a housewife in various kinds of work. Further, in the process, the working women tried to adjust their time by hurriedly completing the household work, and reducing the time otherwise spent on various activities particularly those meant for self/child care and leisure. They succeeded only partially as they had to put in 3-4 more hours of work than the housewives.

The study also indicates that irrespective of the working status, most of the women were getting substantially less nutrient intake than the recommended daily allowance. A comparison however showed that working women were much worse-off than the housewives. The proportion of women suffering from nutritional deficiency as well as the number of such deficiencies diagnosed per woman were significantly higher among working women than among housewives. For example, 47 per cent of the working women as against 22 per cent of housewives were anemic. Likewise, the mean number of clinical signs of nutritional deficiency identified among working women was 2.8 as



compared to 2.2 for housewives.

A study of the utilisation of health services by the two groups however, indicated that working women had better access to antenatal services and also utilised them more than did housewives. For example, a significantly higher proportion of working women as compared to housewives had taken a medical checkup, or the required doses of tetanus toxoid and/or iron/folic acid tablets during pregnancy. Further, even among working women, those who worked outside the house made greater use of private clinics than did those who worked inside the house.

A similar comparison with respect to the health and nutritional status of the children belonging to the two groups of women revealed that participation of women in the paid labour force influenced quality of child care and wellbeing in various ways. Working women were able to give less time to child care particularly to feeding of children. The majority (79 per cent) of the women working outside the home did not take their children to their work place, and about 50 per cent of the children who were left at home, were either fully or partially dependent on mother's milk. Thus, during the working hours when the mothers were away, these children were deprived of mother's milk. Further, the children of working women who were left at home were introduced to supplementary food and were weaned at an earlier age than children of housewives or those working women whose children remained with them during working hours. Moreover, the person who replaced the mother while she was away at work was not always the best person one would like to have. In the absence of any creche or Anganwadi facilities, in about half of the cases the children were looked after by their elder siblings, mostly daughters, many of whom were also responsible for feeding them. In only 15 per cent of the cases, mothers-in-law were present to look after the children. In about one-fourth of the cases the children were left at home to be looked after by the neighbours.

Data on the caloric intake of the children revealed that a much smaller proportion (12 per cent) of children of working women as compared to those of housewives (30 per cent) received the recommended daily dietary allowance. However, clinical examination and anthropometric measurements did not show any major differences among the children. The majority (86 per cent) of the children in both groups suffered from moderately to severe malnutrition.

Prevalence of sickness and number of episodes per month was higher among children of working women, and significantly higher among the children of working mothers who did not accompany their mothers to the work place. However, it was encouraging to note that most of the children from both the groups were immunised.

The study thus brings out much information which could be of immediate interest to policy makers. For example, it clearly demonstrates that the women

## WOMEN'S EMPLOYMENT & HEALTH

participating in the paid labour force are overburdened with work. Apart from participating in income generating activities, they have also to look after their household chores, which obviously puts them in a disadvantageous position as compared to housewives. Thus, those who are concerned with increasing the labour participation of women must also think of ways and means of reducing the workload of women at the household level. The introduction of cheap and appropriate technology which could reduce their time disposition on household work especially in cooking and water fetching could be one possible strategy. Similarly, quality of child care and child health could be improved by the provision of creche facilities. Here again, much thinking is required on the establishment of ~~places~~ <sup>centres</sup> which could provide a hygienic and healthy atmosphere for the development of the child, and at the same time be financially affordable for the economically poor working woman.

The study shows a negative linkage between women's participation in income generating activities and the health and nutritional status of the women themselves as well as their children. However, the findings should be taken with caution as it is equally crucial to investigate the processes through which these relationships are influenced. It is hoped that the analysis of the complete survey data, will provide definite answers to these problems.

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# **A COMPARATIVE STUDY OF HEALTH DISTRESS AND SEX BEHAVIOURAL ATTITUDE OF FAMILY PLANNING ADOPTERS AND NON-ADOPTERS**

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**and**

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## **Introduction**

Most national family planning programmes concentrate on motivating increasing numbers of people to practice family planning by trying to overcome barriers to contraceptive behaviour. Various studies on socio-economic development and personality structure indicate that the use of modern technology and exposure to mass media—newspapers, radio, television and video—can transform a traditional or conservative personality into a progressive or radical one. Thus, the acceptance of family limitation is considered to be a function of a complex set of interrelated personality traits called the “modernity syndrome” which grows in a modern socio-economic, cultural and political setting.

Several workers<sup>1</sup> have reported the importance of psychological variables in the determination of fertility behaviour. While some have indicated that low fertility behaviour can be promoted by modifying the existing attitude system and making certain other changes in communication- motivation programmes, others have revealed that socio-economic and cultural variables play an important role in promoting family planning acceptance. However, these variables do not operate directly to influence behaviour, but are mediated through the individual's psychological system - his beliefs, attitudes, motives, needs, aspirations, values and personality. Further, certain personality traits such as achievement and affiliation motivation, and values such as theoretical, aesthetic and religious values have been found to be significantly related to family planning adoption; modernity values depress fertility by bringing about changes in the value system and helping to develop a rational outlook, while individuals with traditional orientations reject family planning or the norm of a small family as their decisions and actions are guided by traditional values and customs.

The choice of a contraceptive depends largely on personal preference and

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the need of the couple. Therefore, research for developing suitable contraceptives should be accompanied by research on the psychological suitability of the contraceptive which has a direct impact on physical and emotional distress and the sexual behaviour of the couple.

Several reports have been published by Indian workers on the relationship between psychological factors and birth control. Kapoor<sup>2</sup> noted that vasectomised men showed a greater tendency towards neuroticism, and were more submissive, depressed and sensitive than their non-vasectomised counterparts. According to Singh and Bhargava<sup>3</sup> semi-educated, sterilised individuals had a high level of anxiety towards the operation, while educated individuals had a high sense of independence towards it. Risk was found to be an important factor in the adoption of innovations whereas non-compatibility and complexity were major reasons for non-adoption.<sup>4</sup> Bhargava and Gupta<sup>5</sup> observed significant differences in seven personality dimensions while comparing female adopters and non-adopters of family planning devices, while Kumar and Gairola<sup>6</sup> found adopters to be better educated, coming from middle income groups, living in nuclear families and observing the small family norm. Further, they found that early adoption of family planning was significantly associated with lower anxiety, better intelligence and higher need for dominance.

In terms of personality description, adopters are more intelligent, obviously more mature, more persevering, more tender-minded and more resourceful than non-adopters. Adopters as may be anticipated logically, would be significantly less suspicious, more practical, more secure and therefore less frustrated as compared to non-adopters. Broadly, the personality profile of adopters as emerging from second order factors may be described as slightly introverted, non-anxious, decisive, but at the same time more incisive, and above all, more creative<sup>7</sup>. Effective acceptance of family planning is determined by a combination of five factors—level of income, attitude towards family planning, family size, tender-minded emotionality and naturalness of the respondent.

In a recent study, Kapoor and Ghosh<sup>8</sup> found the motivational profile of continuous users of the oral pill as being very cautious, fear-organised, systematic, planned and controlled, with no inhibition or repression of sexual desire and a willingness to express the need for affection as well as to help others in their need for love and affection. In contrast, discontinuers had poor control over their behaviour or their frustration due to unsatisfied needs especially pertaining to sex, love and affection resulting in persistent tension and conflict. Their motivation was decidedly low as compared to that of continuers.

## Objectives

It is evident from the above discussion that family planning behaviour is closely related to psychological factors. Therefore, it has a direct impact on the health of the individual which is also associated with his sex behavioural attitude. The term health does not refer only to the physical health of a person but also indicates mental health. In the context of the family planning programme, the mental and physical aspects of health are of utmost importance, because many people still believe that contraceptive devices have adverse health effects. As a result, these individuals may show such symptoms as inadequacy, depression, anxiety, tension etc. Hence, it is essential to know whether the use of contraceptive devices affects physical and mental health. It was therefore considered worthwhile to compare health aspects and sex behaviour attitudes of adopters and non-adopters of family planning.

The following hypotheses were made:

1. The "operated group" and "spacing group" will differ significantly in physical, emotional and total health distress, as compared to non-adopters.
2. The degree of sex behaviour attitude will differ among the three groups.

## Methodology and Sample

The sample consisted of 90 urban female respondents in the age group of 25 to 35 years, and having at least one child. All the respondents were housewives and belonged to middle class families (income ranging between Rs. 1200-1800 per month). They were selected from five localities of Agra city - Lohamandi, Tajganj, New Agra, Khandari and Belanganj. The respondents were classified into three equal groups of 30 respondents each, namely (i) the "operated group" consisting of those who had undergone sterilisation (tubectomy); (ii) the "spacing group" comprising of those using a spacing method such as the "safe" period, foam tablets, jelly or cream, IUD, diaphragm or oral contraceptives; and (iii) "non-adopters" who neither used any contraceptive nor practiced the natural method for regulating family size.

The tools used for measuring health and sex behaviour attitude were:

1. C.M.I. Health Questionnaire (Female Form): The Cornell Medical Index Health Questionnaire known as C.M.I. Health Questionnaire contains 195 questions in Hindi in informal and simple language. The Hindi version of this questionnaire, made available by Wig et al.<sup>9</sup> was used for the study.

2. Sex Behaviour Attitude Inventory: An inventory developed by Singh<sup>10</sup> was used to measure sex behaviour attitude in two dimensions - permissiveness and restrictiveness, according to sexual experiences. It contains 40 items in Yes/No alternatives of response, and is considered satisfactorily reliable and valid.

The investigators personally contacted each respondent from the three

groups and asked them to fill up both the test questionnaires which usually took one and half hour to complete. In some cases, the questionnaires were used as interview schedules. As the respondents were usually busy in household work, some responded after making two to three visits.

## Results

### *Physical Health Distress*

Table 1 presents the degree of physical distress observed in the three

TABLE 1

Distribution of respondents by degree of physical distress

	Operated group (A) (N=30)	Spacing group (B) (N=30)	Non-adopter group (C) (N=30)
Mean	25.64	13.80	24.36
S D (±)	14.21	7.91	13.66

't' between A and B = 3.64, and between B and C = 3.44, both significant at .01 level 't' between A and C = 0.32, not significant

study groups. It indicates that the "operated" and non-adopter groups showed significantly higher physical distress (at 0.01 level) as compared to the "spacing group". Thus, respondents who were using spacing methods had marked lower physical distress relating to the eyes and ears; respiration; cardio-vascular, genito-urinary and musculo-skeletal systems; digestive tract; skin; nervous system; fatigableness and frequency of illness. The 't' value (3.64) between the two adopter groups revealed significant differences in physical distress, indicating thereby that the "operated group" showed poor physical health as compared to the group using spacing methods. The non-adopter group showed poorer physical health than the "spacing group", while no significant change was observed between the "operated group" and non-adopters.

### *Psychological Health Distress*

A distribution of the respondents according to the degree of psychological stress experienced by them is presented in Table 2. The results show that the "operated" and non-adopter groups experienced greater emotional distress as compared to the "spacing group", though only the two adopter groups showed significantly higher emotional distress (at .05 level). This suggests that respondents using spacing methods had marked lower emotional distress like inadequacy, depression, anxiety, sensitivity, anger and tension, as compared to those who were either tubectomised or were not using any family planning method.

TABLE 2

**Distribution of respondents by degree of psychological or emotional distress**

	Operated group (A) (N=30)	Spacing group (B) (N=30)	Non-adopter group (C) (N=30)
Mean	16.20	9.72	14.16
S D ( $\pm$ )	10.38	7.45	9.71

't' between A and B = 2.54, significant at .05 level. 't' between B and C = 1.85 and between A and C = 0.76, both insignificant.

**Total Health Distress**

The total health distress experienced by the respondents as given in Table 3 reveals that the "operated" and "spacing" groups differed significantly

TABLE 3

**Distribution of respondents by degree of total health distress**

	Operated group (A) (N=30)	Spacing group (B) (N=30)	Non-adopter group (C) (N=30)
Mean	41.84	23.52	36.44
S D ( $\pm$ )	22.90	14.76	25.01

't' between A and B = 3.45, significant at .01 level. 't' between B and C = 1.78 and between A and C = 0.81, both insignificant.

('t' = 3.45) in terms of total health distress. This means that women who were practicing spacing methods had better health as compared to those who had undergone tubectomy or had not adopted any family planning method. Therefore, it may be said that, on the whole, the "spacing group" enjoyed better physical and emotional health. The "spacing" and non-adopter groups did not reveal any significant difference in total health distress between them.

**Sex Behaviour Attitude**

As seen from Table 4, neither of the three groups endorsed the attitude of either restrictiveness or permissiveness in sex behaviour, thereby suggesting that adoption of family planning is not related to permissive or restrictive sex behaviour attitudes.



TABLE 4

## Distribution of respondents by sex behavioural attitude

Permissive sex behavioural attitude	Operated group (A)	Spacing group (B)	Non-adopter group (C)
Mean	26.96	26.92	25.44
S.D.	1.93	2.98	5.65
t' value between A and B = 0.5, B and C = 1.16 and between A and C = 1.28, all insignificant			
Restrictive sex behavioural attitude	Group (A)	Group (B)	Group (C)
Mean	34.08	32.12	34.24
S.D.	1.24	1.26	1.42

t' value between A and B = 1.45, B and C = 1.78, and between A and C = 0.43, all insignificant

## Conclusions

Three main conclusions emerge from this study and may be noted with caution in view of the small sample size;

1. Women using a spacing method of family planning enjoyed better physical, emotional and total health rather than those who had either undergone tubectomy or did not use any method of family planning.
2. Tubectomised women and non-adopters exhibited significantly more physical, emotional, and total health disturbances.
3. Family planning adoption is not related to sex behavioural attitude. Women who were using family planning adoption might have permissive or restrictive attitudes towards sexual behaviour.

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## **SEX SELECTIVE FERTILITY CONTROL—AN OUTRAGE**

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### **Introduction**

On 28 December 1988 at Islamabad in Pakistan the Council of Foreign Ministers of SAARC (South Asia Association for Regional Cooperation) declared 1990 as 'The Year of the SAARC Girl Child'. Obviously the subordinate status to which the female in general and the young girl child in particular have been relegated stimulated the SAARC to take such a decision. On our part, the Dayanand Medical College & Hospital, Ludhiana was prompted to study some aspects of the status of women, so as to contribute its mite to the information required for developing strategies for intervention to improve the status of the girl child.

Ludhiana is a very big industrial city in Punjab state in Northern India. Ironically, north India, and particularly Punjab, has the dubious distinction of a high prevalence of neglect of female children and a detailed account of this can be found in the well-known book titled 'The Endangered Sex' by Barbara Miller<sup>1</sup>. It is not uncommon in Punjab to find names like 'Akki' (meaning, fed up) 'Kauri' (meaning, bitter) or 'Beant' (meaning, endless) being given to female children, which is a further pointer towards the inferior status of females<sup>2</sup>.

The female child in India is discriminated against in all walks of life. She is likely to be breastfed less often and for a shorter duration<sup>3</sup>. There are a number of reports which indicate that the prevalence of childhood malnutrition is quite high among girls as compared to boys in Punjab, and that the degree of malnutrition is severe<sup>2,4,5</sup>. Further, women are less likely to seek medical care<sup>6</sup> even though morbidity and mortality levels among women are higher<sup>6-8</sup>.

The biological superiority of the female for survival is greatly overridden by cultural factors resulting in a sharp disparity in the sex ratios. Nurture overrides nature and today India, overall, has 933 females for every 1000 males. The state of Punjab has one of the lowest sex ratios that is 879 females for every 1000 males. The sex ratio has been gradually declining since the begin-

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ning of the century.<sup>9</sup> Obviously the higher mortality experiences of the females are responsible for these differentials in sex ratio. But lately, a new horrendous dimension has been added to the abuse of the female which fills one with a sense of outrage and that is, the sex selective abortion of the female foetus.

### **Objective**

Even though sex determination of the foetus is advertised blatantly and carried out with impunity followed by sex selective foeticide, it is difficult to obtain hard data on the magnitude of the problem. The person doing it or the person getting it done is least likely to divulge any information.

The present study was carried out to get indirect information on sex selective foeticide by studying the secondary sex ratios, that is the sex ratio at birth.

### **Sample and Methodology**

Data on the sex ratio at birth were obtained from different hospitals and nursing homes in the city of Ludhiana for the years 1981 to 1988. Almost all the major hospitals and nursing homes providing intranatal services contributed the data presented here. In addition, community based data on sex ratio at birth were collected from some villages in Ludhiana District for the years 1984 to 1988. This data was obtained from villages which were under demographic surveillance under a comprehensive community health programme of another teaching hospital in Ludhiana. In addition, for the year 1988, data on secondary sex ratios was also obtained from villages covered by two government subcentres.

For the purpose of statistical evaluation, the proportion of males and females in our study were compared (that is "observed") with the proportion of males and females that would be born (i.e. "expected") if the secondary sex ratio (SSR) was 105 males per 100 females i.e. 51.22 per cent males by applying the Standard Error of Proportion (SEP). The justification for taking SSR of 105 as a norm for comparison has been discussed later in this paper. Further, since SSR depends on the proportion of males and females at birth, the terms "SSR" and "proportion" have been used interchangeably.

### **Results**

Table 1 presents the pooled secondary hospital data on live births for the years 1981 to 1988. It will be seen that the number of males per 100 females or the secondary sex ratio (SSR) at birth is gradually increasing.

During the years 1981 and 1982 the difference in SSR remained within acceptable limits, but from 1983 onwards, it became highly significant at 99% level ( $p < .01$ ). Further, this trend was maintained all through, with a tremendous difference in SSR in the year 1988.

TABLE 1

## Pooled hospital data on live births—sexwise, 1981-1988

Year	Total	Males (%)	Females (%)	SSR	SEP	z value	p value
1981	6043	51.15	48.85	104.70	0.64	0.11	×.05
1982	6396	51.22	48.78	105.00	0.60	0.00	×.05
1983	5721	53.12	46.88	113.31	0.66	2.88	×.01
1984	5844	52.96	47.04	112.59	0.65	2.68	×.01
1985	6643	52.94	47.06	112.50	0.61	2.80	×.01
1986	7122	52.81	47.19	111.90	0.59	2.69	×.01
1987	8033	53.34	46.66	114.33	0.56	3.79	×.01
1988	7253	54.92	45.08	121.80	0.58	6.38	×.01

SSR—Secondary Sex Ratio—No. of males/100 females at birth per year; SEP—Standard Error of Proportion.

Table 2 gives data on SSR as obtained from the records of the rural health centres for the years 1984 to 1988. Here too, the difference in SSR is in favour of males except in the year 1985, and the difference becomes highly significant at 95% level ( $p < .05$ ) in the year 1988.

TABLE 2

## Pooled rural community data on live births—sexwise, 1984-1988

Year	Total	Males (%)	Females (%)	SSR	SEP	z value	p value
1984	941	53.67	46.33	115.82	1.63	1.50	×.05
1985	885	50.17	49.83	100.68	1.68	0.63	×.05
1986	935	54.01	45.99	117.44	1.63	1.71	×.05
1987	894	53.24	46.76	113.88	1.67	1.20	×.05
1988	1210	54.38	45.62	119.20	1.43	2.20	×.05

\* Rural sample 1984-87—22 villages, about 35,000 population  
1988—29 villages, about 45,000 population

### Discussion

Table 3 shows the sex ratio (females per 1000 males) in India<sup>9</sup> from the beginning of this century. The number of females can be seen to be gradually declining except in 1981 when the sex ratio showed a slight increase, though this slight increase is considered as a 'data quirk' by many workers<sup>10</sup>.

Though it is the higher mortality experience of women in the early years which largely contributes to this imbalance in sex ratio, there is reason to believe that the highly significant difference in SSR (Tables 1 and 2) at birth is also responsible for this imbalance. What are the reasons for this signifi-

TABLE 3

Sex ratio in India (Females per 1000 males)	
Year	Sex ratio
1901	972
1911	964
1921	955
1931	950
1941	945
1951	946
1961	941
1971	930
1981	933

cant difference in SSR? The answer is simple—not enough females are being allowed to be born as a result of prenatal sex determination followed by sex selective foeticide. Though we do not have our own data on female foeticide, our view is supported by a report from Bombay, on abortions after prenatal sex determination, in which 7999 out of 8000 of the aborted fetuses were female<sup>1</sup>. Wyon and Gordon<sup>2</sup> commenting on sex ratios on the basis of their famous Khanna study done in Ludhiana district in the mid-fifties (when prenatal sex determination was unknown) concluded that the difference in sex ratios can only be attributed to the higher mortality experience of women, and that the sex difference at birth was negligible. In contrast, our study shows that the sex ratio at birth has an important bearing on this difference.

The cut-off point for the difference in SSR in 1983 (Table 1) coincides with the year when centres for prenatal sex determination sprung up all over Punjab. It may be argued that hospital based data may be biased because a woman with a foetus whose sex has been determined prenatally is more likely to seek a safe delivery in hospital. However, Table 2 disproves this as it indicates that this is also obvious from community based data, with the difference in SSR becoming statistically significant in 1988. Since there is a slight preponderance of males at birth, for the purpose of statistical evaluation we have taken 105 males per 100 females as the standard<sup>1</sup>. This is the secondary sex ratio for the United States where most of the babies are born in hospital and registration of birth is almost cent per cent. This figure of 105 is often taken as the norm against which the sex ratios at birth of other countries are judged. Further, Miller citing the work of Visaria<sup>2</sup> on the range of sex ratios at birth from 76 countries, has given a range of 102-107 males per 100 females as an acceptable standard sex ratio at birth. We have therefore taken the average i.e. 105 males per 100 females as the standard against which the present data has been analysed. Further evidence that a sex ratio of 105 is an acceptable

standard is based on Ramachandra and Deshpande's analysis (as quoted by Miller) of thousands of hospital births that occurred throughout India in 1964<sup>1</sup>.

### **Conclusions and Recommendations**

The unborn female is paying the price for an advance in scientific discovery, that is the prenatal sex determination test. Female infanticide has been replaced by female foeticide. Some supporters of the latter practice expressing their self defeated optimism argue that when the number of females becomes less their 'value' will go up—as if it is a question of demand and supply. Whether it is a 'dowry' which the women brings or 'bride money' her parents get, both are an insult to womanhood. Some argue that foeticide is more humane than infanticide with a logic that is as morbid as the practice if not more. Man has denuded forests, polluted the air and water wealth, and in fact has played with nature at every step. This latest target is aimed at disturbing the very cause of his being. An imbalance between the sex ratios will have wider ramifications. An imbalanced sex ratio resulting from sex selective fertility control can lead to practices like polyandry which in turn favour the spread of sexually transmitted diseases. In the face of so much concern about AIDS, we seem to be paving the way for its spread. A society which professes to protect extinct animals and birds is gradually making its very womb extinct. Who will be the mothers of tomorrow if there are not female children today? Will being 'conceived' be the only equal opportunity they will ever have? Can this be allowed to continue any longer? Certainly not—but we need action against it and not words—action by the people, by the community, by the government and above all, by the women themselves who are a party to it. How long will the unborn female keep paying the price for the indecision on the part of those whose decisions matter?

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# **ADOPTION OF FAMILY PLANNING PRACTICES AND ASSOCIATED FACTORS IN PAHARGANJ AREA OF DELHI**

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## **Introduction**

The Paharganj area in New Delhi has been allotted by the Delhi Administration to the Lady Hardinge Medical College and Smt. S.K. Hospital (LHMC & SSKH) for providing education, motivation and family planning services to the area's residents. The Department of Family Welfare in the LHMC & SSKH conducts periodic surveys of the area by complete enumeration in order to assess programme performance. The first such survey was conducted in 1976. Thereafter, such surveys have been conducted almost every year. The present paper presents an analysis of the data collected from 590 households with the objective of estimating the extent of adoption of family planning practices and its relationship with socio-economic characteristics.

## **Sample and Methodology**

The Paharganj area of Delhi has about 5,000 households. Of these, a sample of 590 households was selected for the present study. The period of survey relates to the year 1985. Utilising the data collected through interviews, the number of family planning acceptors in the area was estimated, and a distribution of acceptors and non-acceptors was derived according to age of the wife, level of literacy, parity, age of last child born, and the number of children/male children for analysis. Appropriate statistical tests were applied, important among these being the standardised normal deviate test and 't' test for testing the differences in proportions and averages.

## **Results and Discussion**

The salient findings of the study are discussed in the following paragraphs.

### ***Method Choice***

A distribution of the respondents by method of family planning used in-

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dictated that 60.6 per cent of the eligible couples in the area were practicing family planning in 1985. Sterilisation acceptors formed 23.2 per cent of the total users; IUD acceptors comprised 13.0 per cent; those using condoms, 23.4 per cent, and those using methods such as the oral pill, foam tablets and other conventional methods formed a marginal 0.2 per cent.

Thus, about 36.5 per cent of the couples in the reproductive ages had accepted an effective family planning method. The effective couple protection rate (by taking into account the effectiveness of various family planning methods) was over 45 per cent which is comparable with that for Delhi as a whole (around 40 per cent).

### Age

The distribution of respondents by age of wife is presented in Table 1. All family planning acceptors who were under the age of 19 reported using condoms. Acceptors under 19 comprised about one-fifth of the total eligible couples in this age group.

TABLE 1

Distribution of acceptors and non-acceptors by age of wife

Age group (years)	Method used			Non-acceptors	Total
	Nirodh	IUD	Sterilisation		
15-19	1 (20.0)	0 —	0 —	4 (80.0)	5 (100.0)
20-24	21 (22.8)	16 (17.4)	9 (9.8)	46 (50.0)	92 (100.0)
25-29	51 (31.3)	24 (14.7)	30 (18.4)	58 (35.6)	163 (100.0)
30-34	40 (27.2)	21 (14.3)	37 (25.2)	49 (33.3)	247 (100.0)
35-39,	18 (17.7)	14 (13.7)	31 (30.4)	39 (38.2)	102 (100.0)
40-44 <sup>i</sup>	8 (10.5)	3 (4.0)	27 (35.5)	38 (50.0)	76 (100.0)
45+	0 —	0 —	3 (100.0)	0 —	3 (100.0)
Total	139 (23.6)	78 (13.3)	137 (23.3)	234 (39.8)	588* (100.0)
Average age	29.77	29.69	33.68	31.00	

\* Answers could not be elicited from two respondents.  
Figures in brackets indicate row-wise percentages

About 50 per cent of the eligible couples in the 20-24 and 40+ age groups had accepted a family planning method, while 33 to 38 per cent of those between 25-39 years of age were practicing contraception. Further, as many as 80 per cent of those in the age group 20-24 years reported the use of spacing methods—either the IUD or condom, and about 20 per cent were sterilisation acceptors. In the 25-29, 30-34 and 35-39 age groups, the proportion of IUD acceptors to total eligible couples remained around 14 per cent whereas the use of condoms declined with age.

### *Literacy*

Table 2 presents a distribution of the respondents by their educational level.

**TABLE 2**

**Distribution of acceptors and non-acceptors by method used and educational level**

Education	Method used			Non-acceptors	Total
	Condom	IUD	Sterilisation		
Illiterate	15 (12.7)	10 (8.5)	34 (29.1)	58 (49.7)	117 (100.0)
Literate	2 (33.3)	2 (33.3)	1 (16.7)	1 (16.7)	6 (100.0)
Primary	12 (18.2)	7 (10.6)	22 (33.3)	25 (37.9)	66 (100.0)
Middle	14 (15.7)	8 (9.0)	34 (38.2)	33 (37.1)	89 (100.0)
High school	54 (27.3)	36 (18.2)	37 (18.7)	71 (35.9)	198 (100.0)
Graduate	41 (38.7)	14 (13.2)	10 (9.4)	41 (38.7)	106 (100.0)
Total	138 (23.7)	77 (13.3)	138 (23.7)	229 (39.3)	582* (100.0)

\* Answers could not be elicited from eight respondents.

Figures in brackets indicate row-wise percentages

It appears from the table that about half of the illiterate respondents had accepted family planning, and that the majority among them were sterilisation acceptors. Among literates, family planning users constituted a little less than two-thirds of the total. Among those who had received up to middle level education, sterilisation was favoured by most, whereas among those who had received high school education or had graduated, acceptance of spacing methods, IUD or condoms, was high.

*Number of Children*

About two-fifths (41.7 per cent) of the respondents who had one living child, 60 per cent of those with two living children, and more than two-thirds (67 per cent) of those who had three or more living children were practicing family planning (Panel A, Table 3).

TABLE 3

**Distribution of acceptors and non-acceptors by  
number of living children and male children**

Number of living children	Method used			Non-acceptors	Total
	Condom	IUD	Sterilisation		
A. Total number					
0	1 (33.3)	0 —	0 —	2 (66.7)	3 (100.0)
1	29 (28.2)	11 (10.7)	3 (2.9)	60 (58.2)	103 (100.0)
2	60 (33.3)	34 (18.9)	14 (7.8)	72 (40.0)	180 (100.0)
3	32 (23.5)	20 (14.7)	39 (28.7)	45 (33.1)	136 (100.0)
4	17 (10.3)	14 (8.4)	81 (48.8)	54 (22.5)	166 (100.0)
Total	139 (23.6)	79 (13.4)	137 (23.4)	233 (39.6)	588* (100.0)
B. Male children					
0	24 (27.9)	11 (12.1)	5 (5.5)	50 (55.5)	90 (100.0)
1	63 (31.2)	22 (10.9)	38 (18.8)	79 (39.1)	202 (100.0)
2	27 (21.4)	20 (15.9)	47 (37.3)	32 (25.4)	126 (100.0)
3	7 (15.6)	1 (2.2)	22 (48.9)	15 (33.3)	45 (100.0)
4+	18 (14.1)	25 (19.7)	26 (20.5)	58 (45.7)	127 (100.0)
Total	139 (23.6)	79 (13.4)	138 (23.3)	234 (39.7)	590 (100.0)
Average number of children					
	2.3	2.5	3.4	2.4	

\* Answers could not be elicited from two respondents in Panel A.  
Figures in brackets indicate row-wise percentages

Method-wise, those with two children mainly used condoms or the IUD, whereas among those with three or more children the proportion of sterilisation acceptors showed an increase with the number of living children. Concurrently, the proportion of spacers declined with an increase in the number of living children.

### *Number of Male Children*

Panel B of Table 3 gives a distribution of the respondents according to number of living male children. It was observed that as many as 45 per cent of the respondents who had no male child were practicing family planning, mainly a spacing method (Panel B, Table 3). Among those with one male child, over 60 per cent were acceptors of family planning, with a little over half of them being condom users, and 31 per cent and 18 per cent respectively, sterilisation and IUD acceptors. Among those with two male children, as many as 75 per cent had accepted family planning, with sterilisation acceptance rising to 50 per cent of the acceptors in this group, and among those with three and more male children, the percentage of family planning acceptors was two-thirds of the total respondents in these groups, the majority being sterilisation acceptors.

### *Age of the Last Child*

About 55 per cent of the respondents whose last child was one year old or less, had adopted family planning (Table 4).

TABLE 4

**Distribution of acceptors and non-acceptors by age of last child**

Age of last child (years)	Method used			Non-acceptors	Total
	Condom	IUD	Sterilisation		
0-1	39 (28.7)	18 (13.2)	17 (12.5)	62 (45.6)	136 (100.0)
2-3	37 (25.2)	23 (15.7)	29 (19.7)	58 (39.4)	147 (100.0)
4-5	21 (23.3)	17 (18.9)	22 (24.5)	30 (33.3)	90 (100.0)
6+	41 (19.2)	21 (9.9)	69 (32.4)	82 (38.5)	213 (100.0)
Total	138 (23.5)	79 (13.5)	137 (23.4)	232 (39.6)	586* (100.0)

\* Answers could not be elicited from four respondents.  
Figures in brackets indicate row-wise percentages

Among those whose last child was two to three years old, as many as 61 per cent were acceptors, while among respondents who had delivered four to five years ago, about 75 per cent were family planning acceptors. The proportion of acceptors again fell to 62 per cent among those whose last child was six years or older. Further, in all the groups, an increase in the proportion of sterilisation acceptors was found to be associated with a concomitant decline in the proportion of condom users, whereas IUD acceptors remained around the same level with an increase in the age of the last child delivered.

### *Some Important Characteristics of Acceptors and Non-acceptors*

Table 5 presents the significance of certain important characteristics such as average age of the wife, average number of living children, average number of male children, literacy level among acceptors and non-acceptors of family planning.

TABLE 5

**Some important characteristics of acceptors and non-acceptors of family planning**

	Sterilisation	IUD	Condom	Non-acceptors
Average age of wife (in years)	33.7* (2.5)	29.7 (2.0)	29.8 (2.5)	31.0 (2.5)
Average number of living children	3.4** (2.4)	2.5 (3.8)	2.3 (3.5)	2.4 (3.0)
Average number of living male children	2.2** (4.2)	2.1 (7.8)	1.5 (7.0)	1.8 (4.0)
Percentage of females				
—Literate	75 (4.2)	87** (4.0)	89** (4.0)	75 (4.2)
—With high school and higher qualification	34** (1.5)	65** (0.7)	69** (0.7)	49 (1.0)

Figures in brackets are % SE

\* Significant at 5% with respect to non-acceptors

\*\* Significant at 1% with respect to non-acceptors

It is interesting to note that except for literacy, the other characteristics of non-acceptors are almost similar to those of users of spacing methods of family planning. This suggests the possibility of converting non-acceptors to acceptors, especially of spacing methods, by increasing the literacy level of females.

### **Summary**

On the basis of a sample of 590 of the 5,000 households in Paharganj

area of Delhi, the couple protection rate was estimated at about 60 per cent—23 per cent with sterilisation acceptors, 13 per cent each of condom and IUD users, and the rest (one per cent) using other methods. Considering the effectiveness of various family planning methods, the effective couple protection rate worked out to over 45 per cent.

A comparison of the socio-economic characteristics of adopters and non-adopters of family planning suggested that the number of male children and female literacy were the major determinants affecting family planning adoption. This was particularly true of acceptors of spacing methods. The findings suggest the possibility of increasing acceptance levels, especially of spacing methods by improving female literacy. (

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# **MANAGERIAL SKILLS—A NEED FOR EFFECTIVE VACCINATION COVERAGE**

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## **Introduction**

Sound programme planning and reinforcement of the existing primary health care infrastructure are the basis for the long time success of immunisation programmes. It was with this objective that the Government of India framed the Universal Immunisation Programme (UIP) from the Expanded Programme on Immunisation. Under the UIP, services are being provided to every part of the country, howsoever remote and inaccessible, through the existing health infrastructure, after strengthening it in the form of better cold chain facilities, sufficient supplies of vaccines, and training of workers. However, success does not depend on the infrastructure alone if supervision and communication are lacking. This study was therefore taken up to assess the role of management skills in supervision and communication in improving vaccine coverage.

## **Sample and Methodology**

The study was carried out in two rural blocks, one being a block with the integrated child development scheme(ICDS) and the other, a non-ICDS block. In the former, additional female workers were present besides the staff from the primary health centre of the area, and the provision of immunisation services was one of their main functions. In the non-ICDS area, immunisation was carried out along with the other functions of the PHC by the PHC staff.

The ICDS block—Shankergarh block of Allahabad district—was about 45 km. from the city. The ICDS project covered the entire PHC with Anganwadis distributed all over, each Anganwadi worker covering a population of 1000 each. The worker registers the names of all children below 6 years and mothers in her area, and helps the PHC staff in getting the mothers and children vaccinated. The Shankergarh PHC is an upgraded PHC with a staff of four medical doctors including a lady doctor but no one had been directly assigned the role of supervising the immunisation programme. The monthly immunisation reports were despatched to the higher authorities without providing

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any feedback to the workers. An old petrol jeep was available for the medical officers for supervision but most of the time it was out of order.

The Karchana block—the non-ICDS block—was situated about 20 km from the city. There were three medical officers posted at the PHC and the second medical officer had been made responsible for the implementation and supervision of the immunisation programme. He had formed two teams of paramedical workers from amongst the PHC staff who regularly conducted immunisation sessions at the outreach according to a preplanned schedule under his guidance. These teams rendered immunisation services apart from the routine vaccinations carried out by the multipurpose workers. A diesel jeep was available which ensured better supervision and mobility. Reports on vaccine coverage were analysed and feedback provided to the workers for better performance.

The surveys in Shankergarh and Karchana covered 30 clusters in each block, following the standard cluster sampling technique. Fourteen infants, 7 males and 7 females were identified in each cluster. Thus a total of 420 children were identified in each block. Their immunisation status was ascertained by checking their immunisation cards or by questioning the parents if cards were not available. BCG was confirmed by scar survey. Reasons for partial or non-immunisation were elicited from the parents.

The tetanus toxoid coverage survey was carried out by questioning 7 mothers with an infant each, in each village, thereby covering a total of 210 mothers in each block. Besides tetanus toxoid doses, they were also queried about the source of vaccination, place of delivery, source of natal care, diseases prevented by immunisation, and the source of their information about the vaccines.

A child was considered fully immunised if he had received three doses of DPT and OPV and one dose each of BCG and measles. A mother was considered protected if she had received both the scheduled doses of tetanus toxoid.

## Results

The following paragraphs present the findings of the study.

### Coverage

Out of the children surveyed in Shankergarh block, 21.9 per cent of the male infants and 18.6 per cent of the female infants were fully immunised as against 33.3 per cent and 35.2 per cent of their respective counterparts in the non-ICDS Karchana block (Table 1).

The difference in coverage was found to be statistically significant ( $F < .001$ ). The total number of immunisations were higher in the non-ICDS area as compared to the ICDS area for all vaccines (Table 1).

TABLE 1

Coverage by dose of vaccine and sex

Vaccine	ICDS Block		Non-ICDS block	
	Males	Females	Males	Females
DPT I	59(28.1)	48(22.9)	122(58.1)	111(52.9)
II	49(23.3)	45(21.4)	111(52.9)	97(46.2)
III	48(22.8)	40(19.0)	85(40.5)	83(39.5)
OPV I	53(25.2)	47(22.4)	123(58.6)	98(46.7)
II	47(22.8)	42(20.6)	101(48.0)	93(44.3)
III	46(21.9)	39(18.6)	96(45.7)	91(43.3)
BCG	46(21.9)	44(20.9)	70(33.3)	75(35.7)
Measles	46(21.9)	43(20.5)	75(35.7)	74(35.2)

The drop out rates as presented in Table 2 indicate that the drop out rate between the first and third doses was greater in the case of DPT than the case of the polio vaccine in both the areas.

TABLE 2

Drop out rates in ICDS and non-ICDS area

	ICDS block			Non-ICDS block		
	Male	Female	Average	Male	Female	Average
DPT						
Ist to IIIrd	18.6	16.7	17.6	30.3	25.2	27.8
OPV						
Ist to IIIrd	13.2	17.0	15.0	21.9	7.1	14.5

However, the drop out rate for DPT in the ICDS area was 17.6 per cent as compared to 27.8 per cent in the non-ICDS area for both sexes. Similarly, the drop out rate for polio in the two areas was 15 per cent and 14.5 per cent respectively; it was considerably higher for male infants (21.9 per cent) as opposed to that for female infants (7.1 per cent) in the non-ICDS area (Table 2). Nearly 5 per cent of the children in both the areas had completed their total schedule of vaccination by the age of 14 months.

### *Reasons for Failure of the Immunisation Programme*

In the ICDS block, the main reason for the failure of the immunisation programme as expressed by four-fifths of the respondents (82.3 per cent in the case of male infants and 86.4 per cent in the case of female infants) was

the absence of the vaccinator (stated by as many as 70 per cent of the respondents); the distance to be covered to reach the place of vaccination was mentioned as an obstacle by about 6 per cent of the respondents. "Lack of information" was observed to be a cause of incomplete or non-immunisation in 11.6 per cent and 7.9 per cent of the parents of male and female infants respectively. Motivation was lacking in 5 to 6 per cent of the parents and 5 per cent had missed the vaccination due to postponement of the date of vaccination.

In the non-ICDS block, among barriers responsible for programme failure as expressed by a total of 53 per cent and 57 per cent of the parents of the male and female infants respectively, were the absence of the vaccinator (21 per cent) and "place of vaccination far away" (10.5 per cent). About 12 per cent of the parents of female infants did not get their child vaccinated due to an illness, whereas the comparative figure for male children was only 6 per cent. "Lack of information" was mentioned as a reason by about 20 per cent of the parents; of these 12 per cent did not complete the schedule out of fear of side-effects. Twenty five per cent of the parents had not immunised their children due to "lack of motivation", and of these, 10-15 per cent had postponed it to a later date, and another 10 per cent had "no faith" in the vaccines. No significant gender-related difference was observed in the attitude of the parents towards vaccination of the child.

#### *Source of Immunisation Service*

The majority of the immunisation services had been provided by the outreach programme in both blocks, the figures being 61.4 per cent and 50.60 per cent for DPT vaccine and 65 per cent and 47.6 per cent for polio in the ICDS and non-ICDS areas respectively. Fifty per cent of the BCG and measles vaccinations had also been given as outreach services. The next bulk of DPT and polio immunisations had been carried out at the PHC itself with an average figure of 20 per cent for the ICDS and 28 per cent for the non-ICDS areas. Private practitioners on the other hand helped immunise 13 per cent and 18.2 per cent of the beneficiaries with DPT and polio vaccines respectively in the non-ICDS area while the corresponding figures were 7.2 per cent and 6.4 per cent for the ICDS block.

#### *Tetanus Toxoid Coverage*

The majority of mothers were aware of the need for tetanus toxoid vaccination during pregnancy (92.4 per cent and 74.8 per cent in the ICDS and non-ICDS areas respectively). However, it was found that only 33.8 per cent had received the first dose and only 30.5 per cent had also received the second dose in the ICDS block (Table 3).

TABLE 3

## Place and coverage of women by tetanus toxoid

Dose of tetanus vaccine	ICDS block		Total	Non-ICDS block		Total
	Outreach	Hospital/PHC		Outreach PHC	Hospital/PHC	
I	46(64.8)	25(35.2)	71(33.8)	102(63.7)	58(36.3)	160(76.2)
II/Booster	40(62.5)	24(37.5)	64(30.5)	92(67.1)	45(32.9)	137(65.2)
Dropout rate (%)	13	4.9	9.8	9.8	22.4	14.4

In the non-ICDS block, the corresponding figures were 76.2 per cent and 65.2 per cent respectively. The drop out rate was lower (9.8 per cent) in the ICDS area as compared to 14.4 per cent in the non-ICDS area. More than 60 per cent of the immunisations were carried out through outreach services in both the areas (Table 3). The next important service outlet in the ICDS area was the hospital where 21.9 per cent of the vaccinations were carried out, while in the non-ICDS area, it was the PHC which had contributed to 18.2 per cent of the immunisation performance. Private practitioners had vaccinated 8 per cent of the mothers in the non-ICDS area as compared to half that figure (4 per cent) in the ICDS area.

*Awareness of Immunisation*

As many as 78.6 per cent of the respondent mothers in the ICDS area and 74.8 per cent of their counterparts in the non-ICDS area, were aware of the six major vaccine-preventable diseases - diphtheria, pertussis, tetanus, poliomyelitis, tuberculosis, and measles as also the need for administering three consecutive doses of DPT. The majority of the mothers in the ICDS block area (83.3 per cent) were aware of poliomyelitis, while diphtheria was the commonly known disease in the non-ICDS area. Nearly 82.9 per cent of the mothers in the ICDS area claimed to have received the immunisation message from Anganwadi workers as against only 52.9 in the non-ICDS area. The next best source in the non-ICDS area was the radio (27.4 per cent) while relatives and neighbours had passed on the information (32.4 per cent) in the non-ICDS area. The television had been helpful in informing about 15 per cent of the parents in both the areas.

**Discussion**

The success of any programme depends on the resources available in terms of money, material, time and manpower. The availability of the first three items does not ensure better coverage in an immunisation programme if the

staff carrying out the programme is not motivated and there is no community participation. It was anticipated that the performance in the ICDS area would be better as there was an infrastructure where children under six years of age gathered regularly, and where immunisation formed one of the functions of the Anganwadi workers. However, the coverage was only 20 per cent in the ICDS area. Better figures (52-60 per cent) have been reported from Delhi, Kerala and Tamil Nadu<sup>1</sup> for BCG, DPT and polio (all doses).

The chief cause for this poor performance was the absence of the vaccinator as stated by 70 per cent of the parents. This one aspect alone reflects the lack of management on the part of the medical officer. It was observed that despite the presence of the staff and a vehicle for mobility the medical officers were providing a "laissez faire" type of leadership instead of a "participatory style"<sup>2</sup>, and inadequate supervision. Implementation, coordination, monitoring and communication were lacking and no supervisory checklists were in effective use. On the other hand, in the non-ICDS area, the coverage was slightly better - 33 per cent for BCG, DPT and polio. Amongst the causes for poor coverage here, the absence of the vaccinator was mentioned by only 21 per cent of the parents, which was an indication of better "staff control" compared to the other ICDS area, despite the absence of the extra ICDS staff. Restructuring of the existing staff in the form of extra teams besides the usual routine had helped to increase the number of outreach points and hence an improvement in coverage. However, the performance was still behind the stipulated target of 85 per cent mainly due to lack of continuous monitoring and evaluation on the part of the medical officer and lack of motivation and knowledge on the part of the community. But the responsibility of informing and motivating the community also lies with the PHC staff and is an indirect indication of the malfunctioning of the programme.

The ICDS project had helped disseminate information about immunisation in its area of operation, and only 9 per cent of the parents complained of lack of information as compared to 20 per cent in the non-ICDS area. Other reasons such as lack of motivation, distance from the site of vaccination, fear of side reactions, and postponement to a later date were also mentioned more frequently in the non-ICDS area (Table 3) as a result of which the drop out rate for DPT was higher (27 per cent) in this area as compared to that (17 per cent) in the ICDS area. The drop out rate for polio immunisation was similar in both areas, perhaps because it is a non-injectable vaccine and is not associated with the side effects of an injection. These causes have been reported in all immunisation programmes both in our country<sup>3</sup> and in other countries<sup>4</sup> and hence need to be tackled. The attitude of people cannot be changed overnight but coverage can definitely be improved even with limited community participation if the number of "missed opportunities" due to the absence of the "vaccinator" and the "vaccines" can be reduced. It is evident

from this study that adequate resources in the absence of good managerial and organising skills can lead to a waste of resources as is evident from the recent UIP coverage survey<sup>1</sup> in Uttar Pradesh which shows low coverage varying between 30-50 per cent for DPT and polio and 15-46 per cent for BCG vaccinations.

### Summary

The vaccination coverage of UIP vaccines in an ICDS area was only 20 per cent as compared to 33 per cent in a non-ICDS area. The chief causes were absence of the vaccinator and lack of information among the respondents. This indicates a lack of "managerial skills" and inadequate communication with the staff on the part of the medical officers. "Management training" of the medical officers is essential for adequate utilisation of resources and sustainability of the programme.

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## **THE VIRGINITY TEST—A BRIDAL NIGHTMARE**

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In Sri Lanka, very often, the wedding night or bridal night turns out to be a bridal nightmare for many brides, because of the perpetuation of an archaic custom commonly called the “virginity test”. A Sinhala maiden is expected to be a virgin at the time of marriage, and traditionally, the bride’s family is keen on advertising the fact that their daughter has lived a very virtuous life, and the groom’s family, and often the groom himself, is as keen or keener to have this fact demonstrated and proved to them. Unfortunately, the acid test which often makes or breaks a marriage in our country is the archaic virginity test, where bleeding at first coitus is taken as proof of a girl’s purity, as is the reverse, that the girl who does not bleed on her wedding night has had premarital sex.

Technically, a virgin is a girl who has never had sexual intercourse. And yet, it is tragic that the traditional Sri Lankan definition of a virgin is one who bleeds at first coitus. Hence, the importance attached to the “virginity test” is the scourge of Sri Lankan brides.

Rituals connected with the proving of a girl’s virginity are an integral part of the Sinhala wedding ceremonies, and these customs are adhered to by both rural and urban people, and surprisingly, by a fair number of educated people and professionals even in the city of Colombo. During the “poruwa” ceremony, the couple is given a piece of white cloth which has to be spread on the bridal bed on the first night of the honeymoon. Bleeding at first coitus is considered infallible proof that the bride is a virgin, and has passed the “virginity test”. Unfortunately a certain percentage of virgins will not bleed at first coitus due to structural variations in the hymen. There is no way for these innocent girls to prove their chastity, and defend their good name, in a society that attaches such importance to a completely unscientific evaluation. Hence, in Sri Lanka the honeymoon night is often not a period of supreme bliss and excitement, but a night which brides await with fear and trepidation, for failure to pass this critical test would spell doom to many innocent young girls, who would sometimes thereafter be harassed by their husbands

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and in-laws for the rest of their married lives.

In very conservative families, an official inspection of the "white cloth" is conducted the day after the wedding ceremony, and often the washer-woman is taken along with the female relatives of the bride and groom to make the critical 'judicial' report. Less conservative families allow the couple to go on a honeymoon, and make the inspection when they return to the groom's house for the homecoming ceremony.

Apart from the many families who indulge in official inspection and public demonstrations of virginity testing, there are a large number of bridegrooms who do not want official inspection of the "white cloth", but who are personally disappointed, and may harbour various suspicions about the bride's past morals. At times, these pent up feelings erupt even several years later, for the author has personally interviewed dozens of couples who have brought up virginity issues even after the birth of their third child.

The author's personal experience at the FPA's clinic for several years, when she dealt with large numbers of women suffering untold misery as a consequence of this social injustice, prompted her to do more research into this subject. The case histories and letters documented and filed at the FPA bear testimony to the sufferings of countless innocent women who have had their lives ruined by this obnoxious custom.

Further, in the course of editing an agony column in a Sinhala newspaper for the past eight years, the author observed that the commonest problem worrying women readers, is the problem of proving one's virginity. An analysis of a sample of letters received by this column revealed that the majority of letters were from unmarried women, and 25 per cent of the problems dealt with issues pertaining to virginity.

### **Objectives and Sample**

First, this article intends to summarise the clinical experiences of the FPA in relation to the "virginity test". Second, since these experiences had indicated the importance of the test in Sri Lankan society, questions designed to provide data on knowledge, attitudes and practices pertaining to virginity, were included in a national survey on reproductive health awareness which the FPA was proposing to conduct at that time. This article therefore, also includes the KAP findings in relation to the "virginity test" from this national survey entitled, "Sri Lankan Youth : A study on reproductive health awareness". In addition to studying the customs and practices associated with the proving of virginity for brides, the larger survey, conducted in 1986, also studied the knowledge and attitudes of young people regarding chastity, pre-marital sex, abortion.

The sample consisted of 2466 Sinhala boys and girls, between the ages



of 16-24, with a fairly good educational background—27 per cent had 11 or more years of education, and only 14 per cent had less than five years of schooling. They were interviewed by trained investigators, using a pretested questionnaire prepared for the purpose; the sample was equally divided between girls and boys.

## Results and Discussion

### *At the FPA Clinic.*

The FPA clinic receives on an average, fifty letters per week from women seeking assistance on virginity issues, and it is very evident that there is much ignorance among our people on this subject. Another observation is that many women seem to approach marriage, not with the expected excitement and eager anticipation but with nervous trepidation, for fear of failing the “virginity test”. Some of the recurring issues are those pertaining to unmarried girls who have had pre-marital sex, and now fear the “virginity test”, and heart-aches that new brides have to endure when they have “failed” the test.

A widely prevalent myth that women want clarified, is the belief that a bride who is not a virgin will faint on the “poruwa”, and that this too is a test of virginity. Even though we know that there is no truth in this, it is surprising how widespread and “accepted” this belief appears to be.

The number of people who visit the FPA's clinic with their virginity problems are legion. They can be broadly classified into three main categories :

1. Mothers who bring young daughters, fearing damage to the hymen.
2. Young girls who fear that their hymen has been damaged.
3. Couples with post-nuptial virginity problems.

### *Mothers who bring young daughters, fearing damage to the hymen*

Virginity is a prized possession in our country, and preserving her virginity until marriage is of paramount importance to a young girl. Hence any injury to the genital region of a young girl is viewed with much concern by many mothers, who promptly proceed to a medical officer, to ascertain whether the hymen is damaged or not.

The author has had to examine dozens of children who have fallen off trees, off bicycles, got entangled in bushes etc. to report on whether their hymen has been damaged. At times it seems as if any cut or abrasion above the mid-thigh is enough to sound the alarm about possible loss of virginity. To give just one example: Recently, a mother from Hetaywatte, Torrington Square came to me with her three year old daughter crying and begging of me to examine the child for loss of virginity. The history given was that the mother was chopping leaves for “mallung”, seated on the ground, with the kitchen knife beneath her foot. The little girl while running past her, had fallen on the upturned blade, which had grazed her buttock. The look of relief and

happiness on the face of the mother when she heard that the tiny cut on the buttock had not jeopardized the girl's future had to be seen to be believed. On the way out, she inquired whether I could give a certificate that her three year old was a virgin, so that this "mallung episode" would not be a cause for concern when the girl finally married ! I am not aware whether there are such documents called certificates of virginity, but hardly a week passes by without my getting a request for such a certificate.

*Young girls who fear that their hymen has been damaged*

The second category of people who visit the FPA with virginity problems, are young girls who fear that their hymen has been damaged. They can be further sub-divided into four groups.

*a) Girls fearing loss of virginity following physical exercise*

Young girls who are keen sportswomen and fear that physical exercise as in athletics, net ball, cycling and other outdoor games would damage the hymen, sometimes come to us for advice on this issue. This belief is widespread, even though it is medically not substantiated.

*b) Women who have been molested in childhood*

Those in this category are young women around 18-20 years of age who have been molested or raped in childhood, or had been coerced into sexual relationships when very young, before they understood or knew what they were doing. Such girls get extremely anxious and agitated when they later hear about the hymen and the proving of virginity, and feel that their future is ruined. Some girls are unable to recall the details of the incident which occurred in their childhood, and often, come to the clinic for an examination, to ascertain the exact condition of their hymen. There are many people who believe that if a man has sexual relations with a young girl before she 'grows-up', her hymen would not be damaged, as they are under the mistaken belief that the hymen is a structure that develops after menarche, i.e. the onset of the first menses. In fact, one-fourth of the youth interviewed in the FPA's survey mentioned earlier, believed this myth, and it is surprising that 30 per cent of urban men and 49 per cent of urban women thought so too.

*c) Girls who have had pre-marital sex and who are now planning to marry a different man*

Those in this category are worried that their marriage will be doomed from the start when they fail the virginity test. Some are frightened to face the possible wrath of an irate bridegroom on the honeymoon. Many girls in this category feel comforted and consoled when they hear that around 25 per cent of virgins will anyway not bleed at first coitus, through no fault of their

own, but due to physiological reasons.

*d) Those requesting a certificate of virginity before marriage*

Some girls who are aware that not all virgins bleed at first coitus, request a medical examination, and want a doctor's certificate confirming their virginity at the time of marriage. These are educated girls who feel that they have no defence, and no way of proving their virtue and innocence should they by any chance fail the traditional "virginity test" and therefore want some form of warranty in case of trouble later on.

Recently, the author interviewed a few engaged couples, where the boys had brought their fiancées for a medical examination shortly before marriage, so that they could find out in advance whether the girls were virgins or not, and avoid the hassle of the "white cloth", inspection and possible unpleasantness later on. It was unbelievable, that in half these cases, the couples were marrying for love, after long romantic courtships.

*Couples with post-nuptial virginity problems*

The majority of clients with virginity problems fall into this category. Half of those falling into this category come to the FPA's clinic while on their honeymoon, usually the day following the wedding. The bridegroom is usually coaxed into visiting the FPA by an innocent bride, who is desperate after failing the "virginity test". The wedding night has been a veritable nightmare, the bridegroom has still not cooled down after casting aspersions on the girl's moral character for half the night, and the poor bride has had no way to prove that she was in fact virgo intact. Some bridegrooms come to us ranting and raving, declaring they have been cheated, and wanting to return the bride to her parents, all because there were no blood stains on the "white cloth". Fortunately the doctors at the FPA have been able to save the situation in the majority of cases by counselling and educating them on the subject of virginity and possible structural variations of the hymen.

There is yet another group of honeymooners and these are couples who have married for love (as opposed to an arranged marriage), have had premarital sex, and are now in a quandary as to how they are to produce blood stains on the "white cloth", because the groom's mother and elders will be waiting to inspect it, and the bride will face a cold reception if the so called proof of virginity is not supplied. It is unbelievable and shocking that there are some grooms who have had premarital sex with their wives, who on the wedding night demand a show of blood, failing which they shamelessly question the morals of the bride. It is difficult to believe that such men, when counselled about the absurdity of their behaviour, reply, that though they may have had premarital sex for some months, and at times for some years, they did not have "proper intercourse", for the girl never bled on any of those occasions.

They thus feel that the girl should then bleed on her wedding night. It is difficult to understand how men in this country attach so much importance to this bleeding at first coitus, and that it can at times override their love for the girl. There is one case history that should be mentioned here to illustrate the unreasonableness of some men when it comes to the question of virginity.

A young unmarried couple, fresh from the University and employed in a reputed establishment, were deeply in love, and came to the FPA one day to ascertain whether she was pregnant or not. As she was found to be pregnant, I advised them to get married soon. Two years later, the same couple turned up at the FPA, with the girl in tears. They had been married three days, and the husband was fighting with her, accusing her of being a woman of doubtful moral character because she failed the virginity test on the wedding night!

In this category with post-nuptial virginity problems, there is still another group of people who present with a different type of problem, and these are people who are completely ignorant about their reproductive anatomy and physiology, and who believe that the hymen is a thick solid barrier that needs to be broken with much force and effort, and should always be accompanied by severe pain and bloodshed. The absence of pain or the absence of profuse bleeding is interpreted by them as failure on their part to have intercourse, and they come to the clinic to find out whether either of them suffer from any anatomical shortcomings or abnormalities. The idea that there must be bleeding at first coitus is so deeply ingrained in the minds of some men, that at times they come to us severely depressed, as they feel they have been unable to fulfill their marital obligations due to inability to break the hymen. Some even think there was no bleeding because they haven't been able to reach the hymen, and seek medical advice as to how far down or deep this elusive structure is situated.

All these illustrate the anxieties and sufferings borne by women in this country, due to society's allegiance to a traditional unscientific test. As counselling services and centres to handle such problems are very few, the plight of thousands of women who are unaware of the existence of, or have no access to counsellors, is very unfortunate.

### *The National Survey*

The following paragraphs summarise the findings of the national survey of Sri Lankan youth.

Almost the entire sample of 2466 people had heard of ceremonies connected with the proving of virginity. The descriptions given by them revealed the type of rituals observed, and the importance attached to 'passing' the "virginity test".

According to the survey, the "virginity test" was considered to be one

of the most important events connected with the "Deveni Gamana". The "Deveni Gamana" or "Maha Gamana" when the inspection of the "white cloth" takes place, is today often synonymous with the homecoming ceremony. The results of the "virginity test" are generally made public on this occasion, and our survey revealed a wide variety of ways in which the result is communicated to those present.

As reported to our investigators, some of the customs followed when the bride had "passed" the test are—

- i. The bride is dressed in red for the homecoming.
- ii. The groom's mother greets the bride with red flowers.
- iii. The groom's family sends red flowers to the bride's parents.
- iv. Beating of drums or lighting crackers when the bride arrives at the groom's residence.
- v. The groom's mother receives the bride with special gifts.

Where no blood stains were seen on the "white cloth" and the bride had therefore "failed" the test, the poor girl is often publicly humiliated, according to the importance attached to the "Deveni Gamana", and the customs prevalent in the particular family or village. Our survey revealed that some of the ways in which such a bride was received at a homecoming were—

- i. The bride was forced to wear a plain white saree on the occasion.
- ii. The groom's mother meets her with white flowers.
- iii. The bride is met by the groom's father or a male relative, and not by the groom's mother or female relatives.
- iv. Photographs hanging on walls are turned the other way round.
- v. The bride's party is not served any refreshments by the hosts, is humiliated by being asked to help themselves to the food laid out on a side table and not from the ceremonial table.
- vi. 'Kondes' or 'Konde Kavums' are broken off before serving.
- vii. A large white rose made of icing is placed ceremoniously on a cake by the groom's mother, in full view of all the invitees.
- viii. Plantains are peeled from the wrong end.
- ix. Very rarely, a public speech proclaiming the displeasure of the groom's family is made.

In some conservative rural families, the bride and her family are greeted with a hostile speech made by a member of the groom's family, proclaiming their displeasure at not receiving a pure and chaste daughter. The survey also revealed that in rare cases, the bride is returned to her parents if she is not a virgin. As approximately 25 per cent of virgins will not bleed at first coitus, the social impact of this humiliating custom is very grave.

The knowledge of the respondents regarding the hymen and virginity analysed in relation to their age, sex, place of residence, and educational level is presented in Table 1.

TABLE 1

Knowledge about the hymen and virginity by age of sex, residence and education

	Percentage giving correct answer			
	Heard of the hymen (% saying yes)	What is the hymen?	Who is a virgin?	Do all women bleed at first intercourse?
All	71.1	29.5	56.2	24.2
<i>Age group (years)</i>				
16-18	64.4	23.9	46.9	19.9
19-24	75.4	33.1	62.3	27.0
<i>Residence</i>				
Urban				
Males	76.0	28.0	61.5	29.5
Females	95.0	33.3	71.1	36.1
Rural				
Males	59.1	24.1	50.7	14.7
Females	77.9	34.4	58.0	30.6
<i>Education</i>				
Grade 1-10	62.8	22.9	47.1	17.1
Grade 11+	93.3	46.8	80.7	43.3

Even though 71 per cent had heard of the hymen, only 29.5 per cent knew what it was. It was surprising that quite a number who had gone through 11 or more years of schooling were also ignorant on the subject of the hymen; for only 46.8 per cent of this group were able to give the correct answers.

Twentyone per cent of men and 31 per cent of women were under the mistaken belief that the hymen was a structure that developed after the onset of menarche. Fortyfour per cent of those interviewed said that they knew nothing about the hymen, and some of them had never heard of the word. There was no significant difference in the knowledge levels of urban and rural youth.

Even though much importance is attached to preserving one's virginity until marriage, and the failure to prove if often scars a woman for life, it is unfortunate that only half (56.2 per cent) the sample we interviewed was aware of the correct definition of a virgin—that a virgin is a girl who has never had

sexual intercourse.

Only 24 per cent of the total sample were aware that all women don't bleed at first coitus, and of the men, only 17 per cent were aware of this vital fact. When the majority of fairly educated men were not aware of the basic fact that all virgins do not bleed at first coitus, as shown in our study, it is not surprising that many brides start their married lives miserably, as a result of failing this so called "virginity test". Urban males were far better informed on these issues when compared to their rural counterparts, though there was no appreciable difference in knowledge levels among the women.

When the respondents were asked whether they thought it was a good custom for a girl to have to prove her virginity on her wedding night, as many as sixtythree per cent of the total sample thought it was a good custom, and surprisingly, 65 per cent of women approved of continuing with the age old tradition. We see from the knowledge level on these issues, that there is gross ignorance on the subject, and as the majority of these women believed that all virgins will bleed at first coitus, they probably felt that the fact that they were pure virgins should be proudly demonstrated to their husbands and prospective in-laws, blindly believing that the virginity test was an infallible test of female chastity.

The 1233 young men participating in the FPA's survey were also questioned as to how important it was to them for their future wife to be a virgin at the time of marriage. Seventysix per cent of those interviewed wanted to marry virgins, and there was no difference in thinking between urban and rural males, and between the very educated and the uneducated. Twentythree of the 25 men who had higher qualifications beyond their 'A' levels, or were University graduates, were also particular that their future wife should be a virgin at the time of marriage. Judging by their knowledge on this subject and their definition of virginity, they would expect a bride who would bleed at first coitus.

The poor knowledge level regarding human sexuality, and the attitude of our young men towards virginity does not augur well for many would-be brides of this country. Even though 76 per cent of the men interviewed in our survey were particular about marrying virgins, one wonders as to how many of them would pass a virginity test at the time of marriage if such a test existed for men?

Some of the important observations on the virginity issue are—

1. The virginity test still occupies an important position in Sri Lankan marriages.
2. Many women suffer unnecessarily due to fear of facing the test, as well as due to their inability to pass the test.
3. The traditional "virginity test" is unscientific and is unreliable, as a fair

percentage of virgins will not bleed at first coitus due to physiological reasons.

4. A high percentage of young Sri Lankan males want to marry virgins.
5. There is no defence or redress for virgins failing the traditional test.

The tradition of preserving one's virginity until the time of marriage is appropriate to our culture. The battle we should wage is against the unfair and unscientific mechanisms adopted to demonstrate this virtue, and the humiliation meted out to brides failing the test.

Women leaders and women's organisations should try to take positive action to eliminate this type of social injustice meted out to our women. The only way, though it may take time, is to educate our youth on this subject, so that in time to come, this degrading custom becomes a relic of the past.

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# **THE STATUS OF WOMEN AND FAMILY PLANNING ACCEPTANCE: SOME FIELD RESULTS**

**MS. RAMAMANI SUNDAR\***

## **Introduction**

The term status of women is very elusive in concept and there are difficulties in defining as well as measuring it (for a detailed discussion on this subject, see Mason<sup>1</sup>. Though social demographic literature uses numerous terms such as female 'autonomy', women's rights, prestige, power or freedom to describe the status of women, its measurement is often confined to two standard and readily ascertainable variables - education and occupation. In this paper, these two indicators of status of women have been used to study their effect on contraceptive behaviour.

## **Sample and Methodology**

The field results described here are based on a recent survey conducted by the National Council of Applied Economic Research<sup>2</sup>. The study covered a large resettlement colony (for all practical purposes a slightly glorified slum) situated in east Delhi. The colony was set up in the mid -seventies to house migrant squatters from all over the city and the households in this area belong to low social and economic classes. The colony has minimum facilities like public taps and toilets. The households were allotted a 25 square yard plot and were given a small loan (two thousand rupees) to make a dwelling. With these facilities about half the households have built a permanent cement structure and the rest have a semi-permanent, or worse, a hut of sorts.

The sample consisted of 578 ever married women who had migrated to Delhi from the state of Tamil Nadu during the 1960s. Most of these women migrated either with their husbands or with their parents, in search of a livelihood in the capital city of Delhi. Data was elicited from these respondents on their educational level, occupation, knowledge and practice of contraception, and number of living children.

## **Results and Discussion**

The paragraphs which follow analyse the status indicators of the respondents namely, education and occupation with their knowledge of contraception, contraceptive behaviour and fertility.

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### *The Role of Education*

Since our sample women belonged to a very low socio-economic stratum, about 75 per cent were illiterate and the remaining so called 'educated' women had had only a few years of education, the average number of years of schooling being as low as 5 years.

Though female education is seen as a key determinant of contraceptive use and there is good evidence that women's education does promote the use of contraception in most developing countries, what makes our field results more interesting is the fact that even the few years of education that these respondents had, could bring about a fall in their fertility through greater knowledge and use of different methods of contraception. As shown in Table 1, the educated women not only had more knowledge of contraceptive methods, but they also knew how to acquire them since they had greater familiarity with modern institutions.

TABLE 1

**Distribution of respondents' knowledge and practice of contraception by education, age and husband-wife communication**

	15-19 years		30-49 years	
	No education	Some education	No education	Some education
% never discussed FP with their husbands	49.8	34.1	54.2	49.0
% discussed FP with husband immediately after marriage	4.5	12.2	0.5	0.0
% who do not know where to go for FP advice and supplies	15.4	2.4	12.1	6.1
% knowing at least one modern non-terminal method	73.0	88.0	64.0	91.0
% who have used any method	46.3	50.6	56.8	75.5
% who have used*				
(i) Condom	14.4	11.0	4.2	8.2
(ii) IUD	15.4	23.2	4.7	14.3
(iii) Tubectomy	18.4	20.7	27.4	40.8
(iv) Vasectomy	1.5	2.4	23.7	18.4
% currently using contraception	36.3	40.2	54.7	69.4
% of non-users who intend to use FP in future	51.9	73.2	15.2	25.0

Sample size: 578

\* The total of the percentages of those who have used the condom, IUD and sterilisation is greater than the percentage of those who have ever used any method, since a woman could have used more than one method during her married life.

Greater knowledge and use of modern non-terminal methods by the respondents also indicates that educated women, even those with some years of schooling, are more willing to engage in innovative behaviour than are less educated or illiterate women. And, in many third world countries, the use of contraception still remains innovative<sup>3</sup>. Further, progress in education increases contraception by reducing irrational fears about the side effects of birth control methods.

Education decreases the demand for children and concepts regarding ideal family size also undergo changes accordingly. This motivates the educated woman to find out ways of reducing her family size. The empirical data collected in two national sample surveys conducted by the Operations Research Group<sup>4,5</sup> in 1970 and 1980 corroborate these relationships. Our field results also show evidence of a fall in the demand for children by educated respondents as compared to non-educated ones, and especially among older respondents.

Women who are educated are also more likely to be in a better position to discuss with their husbands, the ways and means of avoiding or delaying pregnancies, since education reduces the communication gap between husband and wife. It is frequently argued that equality between the spouses influences contraceptive use, and education can enhance the quality of communication between husband and wife resulting in an increase in contraceptive use. Our results do suggest better communication between educated women and their husbands especially in the case of younger women. The proportion of respondents who had never discussed delaying or avoiding pregnancy with their husbands was much lower among those who were educated than among those who were illiterate (Table 1). Among older respondents (30-49 years age) the difference between the educated and uneducated was narrow, presumably because the longer duration of marriage itself brings about a better rapport between husband and wife and education no longer remains an important factor. Moreover, at the time when these latter respondents got married the family planning programme was not so well known. Hence, educated as well as uneducated women were equally conservative in this respect. This is why education did not make any difference in the responses of older women when asked whether they had discussed contraception immediately after marriage - none of them had had such discussions. Younger respondents are also more likely to live with their in-laws and under such circumstances, only educated women are perhaps free enough to communicate with their husbands on such matters as fertility control.

This pattern of difference in husband-wife communication among the younger and older respondents was not reflected in their use of contraception. That is, the difference in the knowledge as well as use of contraception between younger, educated and uneducated respondents, was much greater than that among older respondents. This is in accordance with the studies

of Beckman <sup>6</sup> and Hallerbach<sup>7</sup> which support the hypothesis that the link between husband-wife communication and contraceptive use is rather weak.

Table 1 also shows that the percentage of both current users and ever users of contraceptives increased with education. This is in accordance with several empirical studies which show a similar relationship between education and contraception. For example, the national sample survey conducted by the Operations Research Group<sup>4 or 5</sup> in the early 1980s shows that the percentage of couples currently using contraception in India increased from 27.8 in the case of illiterate to 46.4 for primary, 53.0 for secondary and 64.4 for college educated women.

Our results reveal an interesting difference between educated and illiterate women in regard to their reliance on various methods. Educated respondents showed a greater reliance on methods like the IUD or tubectomy. Since education enhances women's freedom and confidence, they are able to adopt methods which do not require the cooperation of their husbands. In spite of fears about side effects, the proportion of respondents who opted for the IUD was fairly high. The difference between educated and uneducated current users, especially the older ones, was also very high. Even among those educated respondents who were not currently using any contraceptive, nearly three-fourths in the younger age group intended to do so in the future.

As a result of greater use of contraception, educated women had fewer children both ever born and surviving as compared to their illiterate counterparts (Table 2).

TABLE 2

Distribution of respondents by educational level and fertility

	15-19 years		30-49 years	
	No education	Some education	No education	Some education
Mean number of children ever born	2.46	2.26	4.36	3.92
Mean number of living children	2.00	1.90	3.32	3.16

Sample size : 578

Despite lower child mortality which is generally associated with education, the mean number of surviving children was lower in case of educated respondents. Although, the difference in the number of children ever born (or in number of living children) between the educated and uneducated respondents appears marginal, it was found to be statistically significant at a 5 per cent level. One could argue that this difference may be higher due to differences in nuptiality factors such as age at marriage rather than due

to a greater use of contraception by the educated respondents. While there was a difference in the age at marriage between educated and uneducated respondents, especially older respondents (17.5 versus 15.8 years), the influence of this factor was marginal. A look at the figures on average number of children ever born and number of surviving children by duration of marriage (data not presented) showed that upto 10 years of married life, educated respondents had a higher average compared to the uneducated. However, when respondents who were married for longer periods (especially in the case of older women who were married for more than 20 years) were compared, the educated ones had fewer children. In other words, though the educated respondents had a higher average (number of children) in the short run, since they had married at an older age, they eventually ended up with a lower average family size. This, they were able to achieve, with greater use of various methods of contraception.

### *The Role of Employment*

In spite of the popular view expressed that employment opportunities for women must be increased if birth rates are to come down, the relationship between occupation and fertility is much less clear<sup>8</sup>. Whether employment would reduce a woman's fertility or not depends on the nature of employment, number of hours she has to spend outside her home, how best she can combine her job with her role as a mother etc.

In the present study, we found that there was one kind of female occupation which was clearly associated with lower fertility and higher contraceptive use. This was the occupation of a domestic servant. Respondents working as domestic servants had lower fertility and higher contraceptive use rates not only as compared to those who did not work at all but also as compared to those who worked in other kinds of occupations. This finding clearly brings out the importance of the nature of employment in determining the relationship between employment and fertility.

We found that about 54 per cent of the respondents who were employed as domestic servants in middle and upper middle class households had a distinctive fertility behaviour and have emerged as family planning innovators (for details see Basu and Sundar,<sup>9</sup>). These respondents wanted small families and were more willing to accept family planning than were other respondents of similar socio-economic status, both working and non-working. The main reasons for such a desire and their greater willingness to accept family planning were the incompatibility between their productive and reproductive roles, easier access to birth control information and their continuous exposure to a wealthier lifestyle, which is perceived as being positively associated with low fertility.

A typical domestic servant works for six hours a day and is employed

in four or five houses to sweep and mop the floor, clean dishes and wash clothes. Though domestic servants work part-time in middle or upper middle class households, they spend 'enough' time in each house to build up a rapport with their mistresses. The mistresses who are relatively free during the day when their husbands and children are away, usually talk to the servants and offer or accept advice freely on sundry matters.

The rapport which the domestic servants have with their mistresses who belong to a higher socio-economic stratum helps them to gain knowledge about various methods of contraception and their availability. Also, since the homes in which these servants work possess luxuries like a television, a refrigerator, car or a scooter, there is a tremendous "demonstration effect". They feel that because of their small family size, they are able to enjoy a better standard of living, and are in a position to afford better food and better education for their children. All these factors influence the domestic servants and motivate them to restrict their family size.

Moreover, domestic servants do not enjoy benefits like maternity leave or child care facilities which are generally available to women working in the organised sector. And unlike construction workers and farm labourers, they cannot carry their children along with them to their place of work. Apart from the fact that the domestic servants have to travel a long distance to their place of work (usually the homes in which they work are situated away from the slums) the children accompanying them may not be welcomed by their mistresses as they may 'dirty' their houses. This incompatibility between the domestic servant's productive and reproductive roles is one of the factors which discourages them from going in for more children.

Table 3 which presents selected indicators of contraceptive behaviour such as mean ideal family size reflects the greater practice of the small family norm among the domestic servants.

The pattern of contraceptive behaviour indicates not only higher contraceptive use, but a proper mix of various methods - terminal as well as non-terminal—used by respondents working as domestic servants, as compared to the other two categories of respondents. That these respondents begin to practice contraception earlier than those who were unemployed or engaged in other occupations is indicated by the greater occupational differential among the younger respondents in the use of contraception. Moreover, they seemed to rely more on modern non-terminal methods of birth control, which is contrary to the general pattern seen all over the country. Even among the non-terminal methods, surprisingly, it was the much maligned and discredited IUD which was more popular. Among unemployed respondents and those in other occupational categories, the use of the condom was higher, and in the case of the IUD, the domestic servants scored over the other two groups. Since exposure to new ideas and freedom of movement is much higher in case of

TABLE 3

**Distribution of respondents by occupation and age in relation  
to contraceptive behaviour**

	15-29 years			30-49 years		
	Domestic servant	Other	None	Domestic servant	Other	None
Mean ideal family size	2.56	2.82	2.74	2.77	3.32	3.24
% who have ever used contraception	54.7	47.1	37.9	61.2	70.0	53.3
% who have ever used						
Condom	12.2	5.9	16.4	3.6	5.0	8.3
IUD	21.6	17.7	12.1	7.9	2.5	6.7
Tubectomy	20.3	35.3	15.5	25.9	42.5	31.7
Vasectomy	3.4	—	—	25.9	22.5	15.0
% who have used modern reversible FP method	36.5	23.5	26.7	13.0	10.0	11.7

Sample size - 578

Source. See Reference No. 2.

\* The total of the percentages of those who have used the condom, IUD and sterilisation is greater than the percentage of those who have ever used any method, since a woman could have used more than one method during her married life.

the domestic servant category as compared to the other two groups, it is easier for them to go to any family planning centre or a government hospital for the IUD, even without consulting their husbands. Moreover, since a large number of the domestic servants go to a hospital for their delivery, they have greater access to the IUD.

Though there were only five cases of legal abortion, all the five cases were reported by the domestic servant category. This indicates that these respondents are bold enough to go in for a medical termination of pregnancy, in all probability after consulting their employers.

The sterilisation acceptors among the domestic servant category are also different from the population in the rest of the country, who perceive vasectomy to be more complicated and therefore less desirable than laparoscopy or even tubectomy<sup>10</sup>. Among younger respondents in this group, 3.4 per cent of the husbands were sterilised though not a single case of vasectomy was reported by the other two groups which showed a preference for female sterilisation. Even among older respondents, though vasectomy had been adopted by a substantial number of respondent couples, tubectomy was twice as common as vasectomy in the other two groups. Male and female sterilisation rates were about the same in the domestic servants' group. Of course, it is quite possible that the husbands of the latter respondents agree to undertake vasc

tomy not because of the greater authority that their wives wield but because of the income their wives would lose if they are absent from work on account of the operation - a loss that the men who generally work in the organised sector do not have to face. Also, in a large number of cases, the woman domestic servant is the main bread winner of the family, and even if she is not the sole earner, the husband usually has an informal job with an irregular income; moreover, whatever little he earns, is spent on drinking or gambling. In such households, the woman domestic servant cannot afford to absent herself from work for a long time. While men who undergo vasectomy do not require hospitalisation, women may have to be hospitalised for sterilisation, if it is not a laparascopy and to this must be added a few days' rest.

As a result of greater awareness and use of various methods of contraception, this category of domestic servants had the least number of children both ever born and currently surviving as compared to respondents in other occupations as well as housewives i.e. unemployed respondents (Table 4).

TABLE 4

Distribution of respondents by occupational differences in fertility

	15-29 years			30-49 years		
	Domestic servant	Other	None	Domestic servant	Other	None
Mean number of children ever born	2.33	3.12	2.40	3.99	5.05	4.40
Mean number of surviving children	1.85	2.47	2.06	3.12	3.57	3.48
Mean number of live births* in first 5 years of marriage	2.05	2.25	2.03	1.68	1.72	1.72
Mean number of births* during last 5 years	1.43	1.6	2.03	0.40	0.44	0.85

\*Includes only those respondents married for at least five years

Sample size : 578

Source: See Reference No. 2

It is unlikely that these differentials in fertility could be due to differences in their age at marriage or due to differences in their educational level, because age at effective marriage is very similar in all three groups, and among the three categories of respondents, the domestic servants had the lowest level of education. Nor do the differentials in the two occupational groups result from the length of working life of the latter respondents (for detailed discussions see Basu and Sundar<sup>2</sup>).



## Conclusion

There is no doubt that female education has a powerful impact on fertility and contraceptive behaviour; education decreases the demand or desire for children and increases the use of contraception, thereby reducing fertility. This association between female education and contraceptive use has implications for the education policy of India. Compulsory female education at least upto primary level and a proper check on the drop-out rates from schools will, in the long run, help to reduce fertility.

Similarly, though our field results as such do not show any evidence of occupation of women leading to greater acceptance of various methods of family planning, the employment of women as domestic servants seemed to exert a positive influence in bringing down fertility by motivating them to adopt a family planning method. In the case of domestic servants, the motivation to adopt birth control methods operates through three paths: (a) greater incompatibility between job and childbearing, (b) greater exposure to the benefits of a small family, and (c) greater effectiveness in achieving an ideal family size. This again proves that creating job opportunities for women outside their homes rather than in cottage industries, may bring about better results in reducing fertility.

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## **BOOK REVIEW**

**Title:** RELIGION, SOCIAL CHANGE AND FERTILITY BEHAVIOUR

**Author:** R. Jayasree

**Publishers:** Concept Publishing House, New Delhi 1989

**Price:** Rs. 125/-; U.S. \$ 25

Kerala is one of the most socially advanced states of India. It is also a state whose demographic situation has been most intensively studied and researched. This book is yet another addition to the list of many such efforts. The introduction to the book, written by Professor K. Mahadevan has enhanced its academic content. It not only sketches the interface between sociology and population studies but also provides a sufficient account of various social theories of fertility change.

The book comprises of nine chapters. The first one is rather the soul of the book. It not only gives a snapshot picture of the caste stratification of the society in the Travancore region of Kerala but also presents the mosaic of social changes and fertility differentials built up over time. The remaining chapters focus on the analysis of data collected by the author for the three religious groups from three community development blocks in Trivandrum district. It examines the influence of each of the bio-demographic variables, viz. age at marriage, breast feeding, contraception and birth interval besides important socio-economic and social change variables and value of children on fertility among the three major religious groups, Hindus, Muslims and Catholic Christians.

The relationship between age at marriage and fertility based on data on children ever born has also been studied very widely in Indian studies on fertility. Such effects are better understood if control on duration of marriage is also exercised. Significantly in Chapter 2, an attempt has been made to assess factors such as income, occupation, education and cost of marriage in relation to the age at marriage of the females in each religious community of Kerala. In the third chapter, the author relates fertility levels to social status variables such as family type, housing conditions, education, occupation, economic status and opportunity cost of the child in each religious community. The analysis is simple and traditional. Chapter 4 of the book examines the different dimensions of the value of children and their relationship with the achieved fertility. Breast feeding and post partum amenorrhea status have been studied in relation to fertility in the fifth chapter. The sixth and seventh chapters concentrate on the analysis of birth intervals and use of contraceptives respectively in each community along with their effects on fertility. Factors like castes, occupation, education and income have been examined for explaining variations in the use of family planning methods by women belong-

ing to the different religious groups.

The eighth chapter presents the findings of the path analysis. Out of the six major factors of determining fertility behaviour studied under the path analysis, viz. education, opportunity cost, value of children, age at marriage, breast feeding and family planning only the first four factors were found to be most crucial. These factors have however shown differential influence among the three cultural (religious) groups. Out of the demographic variables studied, age at marriage and family planning emerged as important in influencing fertility. The study is a specialised one to explain the differential influence of different demographic, developmental and cultural variables across the different religious groups.

While one need not agree with the path model chosen by the author, it is amply clear that social development coupled with policies of raising age at marriage and a sustained family planning programme are bound to bring changes in fertility behaviour, though with differential effects across the religious groups. By implication, each religious group, even in Kerala, needs a different mode of persuasion and motivation for the acceptance of the small family norm. Many of the findings in the book could have been scrutinised more in depth by proper evaluation of competing paradigms of fertility. The role of economic development is subdued as the income variable has not been included in the path model.

The book is, however, most compact and lucid. It makes interesting reading and provides valuable insights into the process of fertility change across the ethnic groups. But for the fact that the book is priced on the higher side, the reviewer recommends this book for general reading by students of population studies and social sciences in general.

**K.B. PATHAK**

*Professor & Head*

*Dept. of Fertility Studies*

*International Institute for Population Sciences*

*Bombay*

### CONFERENCE ON THE PEOPLING OF THE AMERICAS

In commemoration of the 500th anniversary of Christopher Columbus' landing in the Americas, and at the kind invitation of SOMEDE, the International Union for the Scientific Study of Population (IUSSP) will hold a Conference on the *Peopling of the Americas* in Veracruz (Mexico), in March/April 1992.

This conference will be officially organised under the auspices of the Government of Mexico, represented by the "Consejo Nacional de Poblacion" (CONAPO), chaired by the "Secretario del Gobernacion", and with the full support of "El Colegio de Mexico" (COLMEX), of the "Universidad Autonoma de Mexico" (UNAM) and of other Mexican institutions.

Held in conjunction with the Associacao Brasileira de Estudos Populacionais (ABEP), the Federation of Canadian Demographers (FCD), the Population Association of America (PAA), the Latin American Program of Research on Population (PROLAP) and the Sociedad Mexicana de Demografia (SOMEDE), the Conference will present research on the processes of population settlement and growth in the Americas from precolumbian times to the present, giving equal weight to historical and contemporary research.

The Conference will be interdisciplinary as well as international, encouraging active participation by scholars from around the world and from diverse disciplines, including anthropologists, geographers and biologists, as well as sociologists, economists, statisticians and, of course, demographers. Planned sessions will cover mainstream demographic topics such as the demographic transition, fertility and mortality decline, family structure, rural-urban migration, and urbanisation, as well as topics particular to the "Peopling of the Americas", such as slavery, the consequences of conquest and contact, precolumbian population estimation, the political economy of international migration, the survival of the Amerindians, and population and environmental issues in the Amazon.

Invited papers will be published in the Conference Proceedings before the Conference. Contributed papers are also strongly encouraged.

Copies of the Information Bulletin No. 1 containing the complete scientific programme are available upon request to Bruno Remiche, Executive Secretary, IUSSP, 34, rue des Augustins, B-4000 Liege, Belgium.

**ERRATUM**

Reference No 12 cited in the article entitled, "An evaluation of weight standards and recommended intake in the first year of life" by Dr. (Mrs.) A. Chakravarty and Prof. (Mrs.) A Shukla, which appeared in **THE JOURNAL OF FAMILY WELFARE**, Volume 35, No 5, September 1989, pertains to the year 1985 and not 1958 as published. The reference should read as :

- 12 Dashputre, A : "A field survey to study infant feeding practices in relation to the growth and development of babies in the first year of life in Varanasi", Ph D Thesis, Banaras Hindu University, 1985.

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# **THE CORRELATES OF CONTINUITY IN CONTRACEPTIVE USE<sup>+</sup>**

**DR. JAMES F. PHILLIPS\***

**DR. AXEL MUNDIGO\*\***

**and**

**DR. APHICHAT CHAMRATRITHIRONG\*\*\***

## **INTRODUCTION**

Achieving an understanding of the social forces affecting contraceptive decision-making is increasingly important to population policy. Where fertility decline has occurred in developing countries, trends have been induced largely by changes in contraceptive use prevalence<sup>1</sup>. Research has also shown, however, that a substantial unmet need for contraception often persists despite readily available and low cost family planning services. While evidence suggests that population programmes have contributed to these trends in several settings, strategies for fostering effective and efficient contraceptive practice are often uninformed by social research. International research shows that information about modern contraception is widely available in most developing countries and, that knowledge of methods (at least one<sup>2</sup>) has become nearly universal. Research has also shown that the accessibility of convenient supplies has improved markedly<sup>3</sup> and that adoption has proliferated<sup>4</sup>. There is often a substantial gap, nonetheless, between levels of contraceptive use, intentions and actual behaviour<sup>7</sup><sup>10</sup>. Research on use patterns has shown, moreover, that ever use is often substantially more

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+ This paper is adapted from an earlier publication by James F. Phillips, Axel Mundigo, and Aphichat Chamrathirong entitled, "Correlates of continuity in contraceptive use: A review on research needs," in the proceedings of the Session on Emerging Issues in Fertility Control, International Union on the Scientific Study of Population Control, General Conference, New Delhi, India, September 20-27, 1989.

+ + Although the accessibility of services has improved in many developing countries, there is not always a clear relationship between service accessibility and current contraceptive use<sup>5</sup>. In general, however, convenient services are associated with higher use, particularly if services are delivered to couples in their homes.

prevalent than current use\*. This paper discusses the need for social and behavioural research in the growing number of settings where an understanding of the determinants of continuity of use is a matter of central policy significance. While much descriptive research has been conducted on this issue, the literature on contraceptive use-dynamics is diffuse, unsystematic, and theoretical. Work has been addressed principally to fielding controlled clinical trials of contraceptive devices or pharmaceuticals, rather than deriving inferences about the social determinants of contraceptive behaviour. Yet, variability in continuity of contraceptive practice is often largely independent of the degree of intrinsic effectiveness of the methods that are employed, and more strongly determined by characteristics of users\*\*.

Gaps in scientific understanding of the determinants of contraceptive continuation derive, not only from theoretical lapses, but also from the limitations of methodologies employed in such research. Although life table methods have contributed considerably to research on continuity of use, this approach is more useful for descriptive analyses than for research on complex and interrelated social, behavioural, and programmatic determinants of use dynamics.

This paper reviews research on contraceptive continuation and presents an analytical framework for characterising the role of various determinants. It reviews methodological implications of this framework, and a summary of future research needs.

## **THEORETICAL CONSIDERATIONS IN RESEARCH ON CONTRACEPTIVE CONTINUATION**

In the early literature on contraceptive use dynamics, variability in continuity was attributed to two factors: 1) an inverse relationship between the motivation to limit fertility and contraceptive attrition that increases markedly as couples achieve their desired family size, and 2) a relationship between fecundity and method failure in which fecundity is inversely associated with age. The fecundity explanation has an important bearing in the case of traditional contraceptive methods, but little role in determining discontinuation among users of modern contraception. Research priorities have therefore concerned the "motivation hypothesis", specific policy implications of the determinants of the motivation to contracept, and the consequences of motivation for fertility regulation.

---

\* The substantial gap that exists in many countries between ever use of contraceptive and current use suggests that drop-out rates are high (see Carrasco<sup>11</sup>)

\*\* This early finding of use-effectiveness research in Taiwan has been consistently demonstrated in subsequent research conducted elsewhere in developing countries (see Ross et al.<sup>12</sup>).

### A. The Motivation Hypothesis

Research has shown that the effectiveness of contraceptive practice increases markedly as couples achieve their desired family size, and that the duration and regularity of contraceptive use thus improves with increasing age, parity, and duration of marriage\*. This suggests that the attainment of reproductive goals is the most important single determinant of the efficacy of contraceptive use, and that the effects of age and parity are exogenous influences on this fundamental determinant of contraceptive behaviour.

Research should seek to extend the motivation hypothesis to incorporate factors that influence the desire for additional children, or to improve understanding of the precise behavioural consequences of varying motives. Posited causal frameworks have occasionally incorrectly assumed that relationships reported in the fertility literature will apply to contraceptive continuation, as well. Literature reviews have shown, however, that the effects of indicators of social status on the duration of contraceptive use differ substantially from findings from the fertility determinants literature\*\*.

A possible explanation for the failure of studies to demonstrate consistent relationships may relate to their failure to specify a comprehensive framework for hypothesised effects. As a result, analyses fail to control for interrelated effects, or to allow for relevant indirect effects. This limitation of the literature is exacerbated by the problem of selectivity. Since users of contraception must first adopt, the population of contraceptors is selected on the basis of characteristics that determine who adopts\*\*\*. For example, studies of contraceptive continuation typically show that current use among married women of reproductive age is lower in rural areas, but that continuation rates are higher among rural residents, because the rigors of adoption select for the more motivated contraceptive<sup>12,19,24-30</sup>. Achieving an understanding of the determinants of continued use in a population of contraceptors is clearly different from understanding the determinants of fertility levels, contraceptive adoption rates, or levels of contraceptive prevalence in the population at large. Until research addresses the determinants of contraceptive use dynamics and attrition directly, our understanding of the discontinuation problem, and what can be done to ameliorate it, will thus be impaired.

---

\* This was first demonstrated in the United States (Potter et al.<sup>13</sup>; subsequently in developing countries<sup>12,14-19</sup>. Several studies of World Fertility Survey data corroborate with findings from the early studies

\*\* The socio-economic characteristic differentials so often reported for fertility<sup>20</sup>, do not apply to continuity of use<sup>17</sup>.

\*\*\* For example, in separate studies, education has been shown to be inversely related to effective contraceptive use (Bouvier<sup>21</sup>), unrelated to effective use (Ryder<sup>22</sup>) and directly related to effective use (Siegel et al.<sup>23</sup>).

## B. The Hypothesis of Programme Effects

Some authors argue that a shortcoming of demographic and sociological research pertinent to the motivational model is its failure to adequately specify the effects of programme activities and policies—issues over which policy makers have some measure of control. Most programmes provide counselling to accompany services, distribute printed information and supplies, assign workers the task of visiting clients at home, or organise community activities. All such policies are implemented under the assumption that a client's continuing contact with the programme supports the practice of contraception over time. The hypothesis of programme effect, posits that some couples who would not otherwise continue to practice contraception do so because of contraceptive services. According to this hypothesis, services that are delivered on terms that make them attractive to users can obviate the need for personal motivation to limit fertility.

Surprisingly little formal research has been addressed to this issue, however. The few studies that have tested the hypothesis have found weak or non-existent relationships. There is no systematic evidence to support the hypothesis that reassurance or resupply visits by field workers have any effect on the duration of contraceptive use<sup>31, 32</sup>. Nor has research consistently shown that providing information to clients promotes continuation once the effects of literacy and reproductive motives are controlled\*. Complaints about the quality of services in some studies are associated with low continuation rates<sup>34</sup>, although this finding is not consistently corroborated<sup>35, 36</sup>. A few studies of the reasons for discontinuation have shown that the waiting time for clinical services is associated with discontinuation, but those results appear to be restricted to the relatively few large urban clinics where waiting occurs<sup>37, 38</sup>. Outreach services generally select for unmotivated clients, and are thus associated with low continuation rates<sup>12, 39-42</sup> but research has yet to address, in a theoretically cohesive framework, whether programme activities can substitute for weak motivation by inducing and sustaining practice among adopters recruited through special outreach efforts.

Research on service operations typically identifies differentials by service worker type<sup>42, 43</sup>, or by service site<sup>33</sup>, or by geographic area<sup>44</sup> with the result that analysts conclude with recommendations that programme management should be improved, supervision should be strengthened, outreach intensified, or communication themes refined. It is often not clear from such recommendations, however, what specifically is to be done to introduce

\* Clinical studies often show that continuation rates do not differ appreciably if the effects of age, parity, place of residence, or contraceptive history are controlled (See, for example, the careful study by Rahman et al.<sup>33</sup>). Such programme effects may be the consequence of undiagnosed interactions between social and behavioural factors and service approaches.

behavioural change—what specific operational changes are to be undertaken and how specific aspects of social and behavioural determinants of contraceptive continuation will be influenced.

The limitations of existing descriptive research for policy is further demonstrated by compliance studies. Some research has demonstrated, for example, that compliance with contraceptive regimen can be exceedingly poor even if programme support, as measured by frequent follow-up, intensive communication, and excellent supervisory support of field operations exists<sup>45</sup>. Where the social determinants of compliance are not understood, however, the operational implications of widespread non-compliance in a seemingly sound service operation are unknown. Thus there is a need for research on the net and joint effects, of social and operational factors, estimated or investigated in ways that contribute to an understanding of how programme effects can be improved.

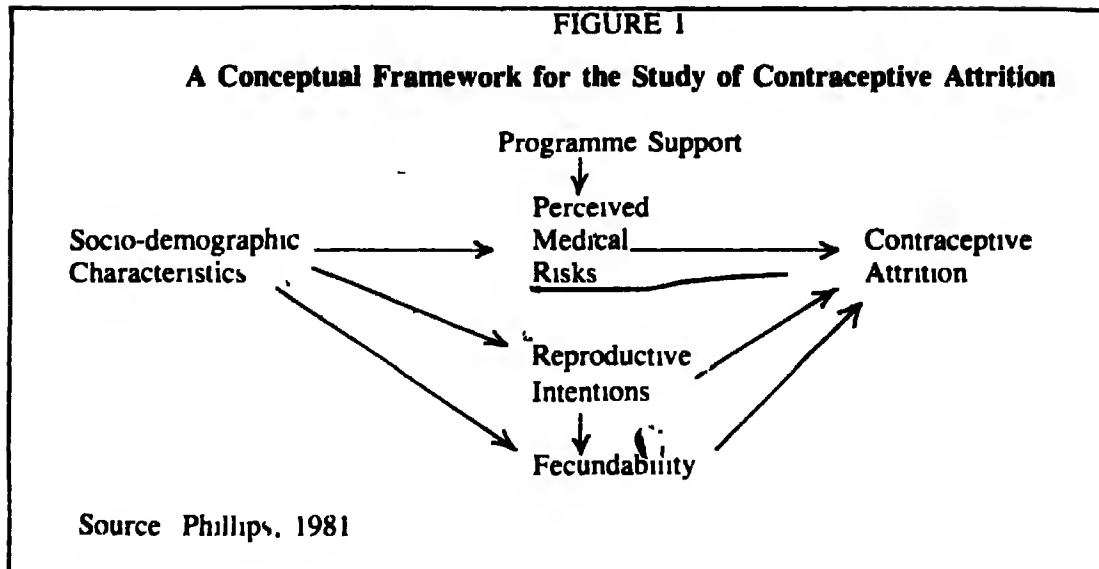
### **C. The Effects of Health Concerns**

That health concerns affect the duration of contraceptive use has long been demonstrated in numerous studies. Side effects are the most frequently cited reason for termination<sup>12 15 17 46-49</sup>, and fears and negative experiences relating to contraception are more important correlates of termination than characteristics of adopters<sup>50</sup>. Moreover, perceived side effects and health concerns can interact with psychological factors<sup>51</sup>, or adverse publicity about the safety of methods<sup>52</sup>. Health concerns are evident among terminators of injectable methods<sup>53 56</sup> despite the fact that the common disorders leading to termination typically pose no threat to health<sup>57</sup>. Side effects are also typically the most widely cited reason for terminating use of intrauterine devices<sup>15 58-60</sup> and are important, as well among oral contraceptive users<sup>32,61-65</sup>.

While health concerns strongly influence the continuity of use, the effect of side effects may be exaggerated somewhat by the research instruments that have been employed. It is the usual practice to ask direct questions about reasons for termination of contraceptive use to women who are ambivalent about contraceptive use and lack a rationale for termination prior to being interviewed about the subject. A simple retrospective response is elicited regarding reasons that are, in fact, complex, multidimensional, and ill defined at the time of the decision to terminate contraceptive use. Subconscious reasons for continuing or discontinuing a method may be as important as consciously articulated reasons<sup>66</sup>. There is a need for improved understanding of the complex interplay between behavioural factors affecting motives, physiological factors affecting risks, and attributes of the quality of care.

### **D. An Illustrative Analytical Framework**

An illustrative conceptual scheme which summarises the literature on



the duration of contraceptive use is depicted by Figure 1. No single analysis has estimated effects posited in this framework; since elements are complex, multidimensional, are challenging to specify and measure. Nor should this framework necessarily guide future work. Rather, it illustrates the challenges that derive from existing literature.

In Figure 1, social, demographic, and behavioural variables are viewed as affecting contraceptive continuation through their effects on four mediating factors: programme support variables, perceived medical risks, personal motivation, and fecundability. Of these, motivational and fecundability effects cannot be observed directly. Perceived medical risks are influenced by motives which are driven, in turn, by factors, such as education, age, and other social background variables. Motivation to contracept has a direct effect on continuation. Of the effects posited in Figure 1, the least substantiated in the literature, and those most directly relevant to policy, are the effects of programmatic variables. The diagram posits that socio-demographic variables affect the implementation of programmes, because economic conditions affect service capabilities, strategies and priorities. For example, programme support is likely to be more active in areas near clinics, in neighbourhoods where residents are receptive to outside visitors and their ideas. Programme effects, moreover, are conditioned by the societal context in which services are provided.

Programme support may reduce the effort required to practice effective contraception through convenient, inexpensive and congenial services (direct effects on continued use), or it may reassure couples about the risks of contraception through education and information at the time of adoption and medical care, consultation and follow-up over time (an indirect effect of the quality of care that mitigates the effects of perceived medical risks). Critical to understanding such effects, in other words, is researching the interface between service providers and clientele; the interpersonal dynamics that en-

sue in the course of services, the effects of provider-client exchanges on behaviour, and the social and behavioural influences of effective programme-user dynamics.

## **METHODOLOGICAL ISSUES IN RESEARCH ON CONTINUITY OF USE**

The study of contraceptive effectiveness received its major impetus from the early work by Potter<sup>67</sup> and Tietze and Lewit<sup>68</sup> which specified procedures for studying levels of use-effectiveness and estimating of component decremental factors that explain termination. Multiple decrement life table methods have since been used in a plethora of clinical and field studies for comparative trials of contraceptive methods, studies of the efficacy of methods provided by national programmes, and evaluative studies of special projects. In addition to standard statistical methods there are intensive social research techniques collectively known as micro-demographic research methods. We shall review each, in turn.

### **A. Statistical Approaches to the Study of Contraceptive Use Effectiveness**

Life table techniques, while invaluable for descriptive applications, have limited application in the study of determinants of use dynamics if used in isolation of other social science or statistical research tools. Although life table methods compensate for censoring techniques are not well suited to deriving inferences about multiple causal factors. Stratification of independent variables of interest is often informative<sup>60,69-71</sup>, but more than two stratification variables can exhaust the data, expand the number of tables, and obfuscate, rather than clarify, the role of any particular explanatory variable in the analysis.

Findings from studies of contraceptive continuity and discontinuation are highly sensitive to the data collection instruments used and the operational definitions employed. Despite early recognition of this problem<sup>68,72</sup> and the dissemination of several carefully administered cross-national comparative studies which used internationally comparable techniques, literature reviews on studies of the continuity of contraceptive practice often cite the non-comparability of research instruments as a factor hampering the utilisation of research<sup>17,73</sup>. At issue in the planning of research on continuity is whether studies should be statistical or qualitative. Statistical studies, in turn, are of two types: prospective and retrospective studies, each of which have comparative advantages and disadvantages.

#### *Prospective Studies of Continuity of Use*

The study of contraceptive use dynamics is complicated by the fact that a cohort of users must be observed over time, with the possibility that cases will be lost to observation in the course of study. Methods for undertaking



such studies are well developed and appropriate for comparative trials of contraceptive modalities. The disadvantage of prospective studies is that costs are high, delays in obtaining results are protracted, and complexities of field work are severe. As a result, social and behavioural research is often not adequately incorporated into study designs because of the added complexity of this type of work. A possible solution to this problem, however, is to undertake collaborative studies in which social and behavioural components or modules are administered in the course of longitudinal research.

### *Retrospective Statistical Studies of Continuity of Use*

Retrospective studies of contraceptive<sup>1</sup> behaviour are useful when cost and time constraints the fielding of longitudinal studies. A useful review of techniques for this approach to research appears in Laing<sup>74</sup> together with sample questionnaires and sample analyses.

A potentially problematic issue in retrospective designs are the memory biases associated with the recall of contraceptive events. Laing<sup>75</sup> proposed a contraceptive calendar method designed to minimize such biases which has been successfully used in the Philippines, but not widely tested or applied elsewhere. Methods for conversion of calendar data to familiar life table variables have been proposed<sup>74</sup>.

### *Life Table Regression Method*

A key problem concerns the issue of the censoring of contraceptive histories, and how best to construct dependent variables for regression analyses. Some authors have proposed using cumulative continuation status at some point of time as a dummy variable and conventional regression analysis of predictors of the status indicator<sup>36,76</sup>. This approach can lead to serious biases however, owing to the reduced statistical efficiency of parameter estimates. The underlying reason for this problem concerns the nature of the relationship of discontinuation with time, a problem that recurs in survival analyses\*. The use of a cutoff point implicitly assumes that the attrition process follows the same relationship with time for each of the covariates of interest. This is clearly not the case, however, since the effects of covariates on continuity differ as the time since adoption elapses<sup>78,83,84</sup>. Further biases arise if ordinary least squares regression is used in place of most statistically robust log linear models<sup>85</sup>.

Because the analysis of censored data uses statistical methods that are not familiar to many analysts or because computer software for this purpose is not widely available, rigorous statistical analyses are typically not in-

\* A review of this literature is beyond the scope of this brief report. Analysts of event history data reviewed by several workers<sup>77-82</sup>.

vestigated in the literature. Techniques for the regression analysis of life tables have been developed<sup>77</sup> and applied to the study of demographic processes (see for example Trussel and Hammerslough<sup>86</sup> but are typically not applied to contraceptive use dynamics data. Work on this issue by Cox<sup>77</sup> has stimulated much ancillary methodological exposition (for example Prentice and Kalbfleisch<sup>87</sup>) and considerable substantive work in demography. A potentially promising direction for future work involves the application of life table regression methods to the study of determinants of contraceptive use dynamics. Application of these techniques could be productively used to assess the net effects of specified social, behavioural, programmatic and demographic variables. Caution is warranted in the specification of such models, however, since studies have shown that contraceptive attrition processes are typically complex<sup>41,88-90</sup>. This complexity is produced by the fact that discontinuation of methods is often high in the early months of use, declines with time, and stabilises as users who continue through the early period of use are comprised of women who are a selective group who are progressively tolerant of methods as time progresses. The underlying relationship of discontinuation with time may co-vary with posited determinants. Discontinuation early in use, for example, may be strongly affected by a given co-variate that has little or no effect on discontinuation among long term users.

Attempts to specify all co-variate effects and their interactions with the attrition process can lead to intractable mathematical problems. There has been little illustrative investigation of such issues to guide analysts, and yet careful, well-informed, statistical inquiry is essential. Although new statistical techniques can represent powerful analytical tools, the casual use of life table regression methods can lead to errors in inference if models are incautiously specified. The application of new multivariate methods for the analysis of life table continuation data, however, may contribute valuable insights into the net relative effects of variables on the duration of use and enrich scientific knowledge about the determinants of contraceptive use dynamics.

## **B. Micro-demographic Approaches to the Study of Contraceptive Continuation**

Just as micro-demographic analysis can contribute to the analysis of choice behaviour, micro-demographic methods can provide useful insights into the determinants of contraceptive continuation. Although such methods have contributed to the development of theories of determinants of fertility change<sup>91</sup> little systematic application of micro-analytic methods has been applied to the study of contraceptive use dynamics. Available research has been informative, but largely descriptive or exploratory (see for example, MacCormack<sup>92</sup>).

Case studies of efforts to respond to micro-demographic analyses with

experimental policy changes might lead to an improved understanding of contraceptive use dynamics. Such studies could incorporate a diagnostic phase utilising anthropological or focus group investigations followed by a small scale trial of proposed service changes. The trial could be evaluated with standard life table methods and case study analysis could be used to research the effects of operational change on the continuity of use. Such an approach would benefit from the collaborative work of an inter-disciplinary team of investigators. Given the complexity of determinants of contraceptive use dynamics, it is possible that the coordinated investigation of a team, operating under a unifying conceptual framework, with complimentary research perspectives could provide valuable insights into the determinants of contraceptive behaviour.

### SUMMARY

The analysis of determinants of contraceptive use dynamics has been characterised by repeated application of life table methods developed for the comparative analysis of the use-effectiveness of contraceptive modalities. Findings from this literature appropriately focus on the efficacy of methods and technology, with controls introduced for differentials in age, parity or reproductive preferences that could contaminate comparisons of interest. This approach, while useful and appropriate for research on the efficacy of new contraceptive technologies, contributes little to the need for a broader understanding of how contraceptives are used, misused, or not used at all. Despite widespread availability of methods, ubiquitous knowledge, and widespread ever use, contraceptive methods are often not used regularly or effectively. Characteristics of methods and services may play a crucial role, and the introduction of new and improved technologies are critically needed; but existing contraceptive technology is likely to dominate the choices available over the next decade. Researching the social determinants of the behaviour of users represents a potentially fruitful area where social research can contribute to improved service quality and efficacy.

Research which is guided by an analytical framework is more likely to lead to cross-nationally relevant insights than descriptive studies. While research methods should use, whenever possible, established definitions and standard life table methods, priority should be placed on extending the standard methods with ancillary micro-demographic analyses or life table regression methods.

While longitudinal studies are more likely to lead to rigorously estimated causal inferences than retrospective studies, efforts should be addressed to testing and developing simple to use and inexpensive retrospective techniques. Emphasis in the existing studies, however, has focused on measurement of contraceptive use dynamics as a dependent variable. The issue of

how to study requisite independent variables over time, what variables are appropriately researched, and how they are to be incorporated into use dynamics analyses, has been generally neglected in this literature. Research on the determinants of contraceptive use dynamics, if addressed to priority needs and guided by social theory, could contribute important insights into how service quality and efficacy could be improved.

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# **CONTRACEPTIVE USE DYNAMICS OF COUPLES AVAILING OF SERVICES FROM GOVERNMENT FAMILY PLANNING CLINICS—A CASE STUDY OF ORISSA\***

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## **INTRODUCTION**

The lack of a theoretical framework which can offer a complete picture of the acceptability of a contraceptive and its use dynamics on the one hand, and the absence of proper methodology to analyse the data, on the other, have perhaps played a major role in discouraging researchers to address themselves to issues concerning the choice of a contraceptive and its use dynamics. However, recent advances both at a conceptual level on the acceptability and choice of contraceptives,<sup>1,3</sup> and in the area of methodology development<sup>4,5</sup> to handle such data, have stimulated many researchers to undertake studies on contraceptive use dynamics. Two recent edited volumes<sup>6,7</sup> provide a number of good articles on the subject. It is also expected that fairly soon, the results of many more studies initiated by funding agencies like the Special Programme of Research Development and Research Training in Human Reproduction of the WHO, the Ford Foundation, IPPF etc. will be available to bridge some of the identified knowledge gaps on the subject.

## **OBJECTIVES**

The present study which is also one attempt in this direction, seeks to understand the contraceptive behaviour of couples seeking family planning services at government family planning clinics. It provides a detailed profile of the couples as to why people prefer one or the other contraceptive, how many children they had at the time they visited the family planning clinic, and what was their family planning status? Whether they were adopting family planning for the first time or they wanted to switch over to another method, or they were past users and had come again to accept contraception? It is hoped that an understanding of such contraceptive use dynamics would help

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in developing strategies for the promotion of contraception and fill up a knowledge gap which has been recently identified in many major reviews on contraceptive use dynamics<sup>2,8-12</sup>.

## DATA

This paper is based on data collected for an ambitious study on the "Choice of Contraceptives and its Continuation" conducted by the Operations Research Group (ORG), Baroda, with financial assistance from Ford Foundation, New Delhi. The study covered three states of India namely Bihar, Gujarat and Orissa. In each state, all couples who visited selected clinics for a family planning method were registered during the initial twelve months of the study period. All the registered couples were interviewed before they met the clinic staff for advice and were re-interviewed after they had been counselled at the clinic. Subsequently, each of them was visited after 3 months and 12 months from the date of acceptance of the contraceptive. Thus, each acceptor was interviewed four times over a period of one year.

At each interview the acceptor was questioned about her family planning status. During follow-up interviews she was also probed to determine whether she was continuing the method, and if it had been discontinued, the reasons for discontinuation. In the case of sterilisation, information regarding after effects if any, and follow-up services was sought. Apart from this, at each study site, 26 case studies were also conducted to collect 'soft data' on the decision making processes. Detailed guidelines were developed in order to carry out the case studies systematically.<sup>13</sup> Thus, the study provided a detailed database on contraceptive choice as well as its use dynamics.

The present paper is based on the pre- and post-counselling interviews and the first follow-up interview of a total of 1023 family planning acceptors attending four government family planning clinics in Orissa State namely, Capital Hospital Unit VI, Zonal Hospital Unit IV, Saheed Nagar Dispensary, and Municipal Hospital. Of these, 41 (4.0 per cent) had accepted vasectomy, 379 (37.4 per cent) tubectomy, 458 (45.2 per cent) IUD, 102 (10 per cent) oral pills and 19 (1.9 per cent) condom. The data collected in the second follow-up survey will be presented elsewhere.

## RESULTS AND DISCUSSION

### Socio-economic Profile of the Respondents

Table 1 presents the socio-economic and demographic profile of the women who had accepted one or the other contraceptive at the selected clinics. As can be seen from the table, the women were generally young and the majority were in the age-groups 20-24 (24 per cent), 25-29 (42 per cent) and 30-34 years (20 per cent). Their mean age was about 27.8 years.

TABLE 1

Percentage distribution of respondents by socio-economic and demographic characteristics

Characteristic	N = 1013
<i>Age (years)</i>	
15-19	1.7
20-24	24.3
25-29	42.0
30-34	20.9
35+	11.1
Mean	27.8
SD( $\pm$ )	4.8
<i>Education</i>	
Illiterate	15.7
Upto primary	5.6
Middle	23.9
Secondary	34.3
College & above	20.5
Mean	8.4
SD( $\pm$ )	4.8
<i>Religion</i>	
Hindu	97.2
Scheduled Castes/Tribes	8.3
Backward Classes	0.3
Other higher castes	88.6
Muslims	2.3
Others	0.5
<i>Monthly income (Rs.)</i>	
Less than 550	4.6
551-1000	23.6
1001-1500	26.6
1501-2000	19.0
2000+	26.2
Mean	1573.9
SD( $\pm$ )	759.6
<i>Occupation</i>	
Working	14.4
Non-working	85.6
<i>Type of family</i>	
Nuclear	68.2
Joint	31.8

Ninety seven per cent of the respondents were Hindu, with only about 9 per cent belonging to the scheduled castes or tribes. In other words, most of the Hindu respondents were higher or backward caste Hindus. Further, a very small proportion (5 per cent) of the couples came from families below

the poverty line, that is, having a monthly income of Rs. 550/- or less; about 25 per cent each of the respondents belonged to families with a monthly income of Rs. 551-1000, Rs. 1001-1500 and Rs. 2001 or more. The average family income was estimated to be Rs. 1574 per month.

Most of the respondents (84 per cent) had received formal schooling - about one-fourth had passed middle school, and another one-third had studied upto the secondary level. An analysis of their work status revealed that only about 14 per cent were working women. The above profile clearly indicates that these respondents who sought assistance from the clinics were generally literate or educated, and belonged to the middle or high income groups.

### Reproductive Background

At the time of registration, each respondent had experienced a number of pregnancies and had several living children. The mean number of pregnancies was estimated to be 2.7, with 2.4 live births, 2.3 living children, and 1.25 living sons (Table 2).

**TABLE 2**  
Percentage distribution of respondents by reproductive background

Number	Preg-nancies	Live births	Induced/ spont-aneous abortion	Still births	Living child-ren	Living sons
0	0.5	0.7	83.3	89.4	0.8	19.2
1	19.7	23.6	13.6	8.1	24.0	45.8
2	31.9	38.5	2.7	1.6	39.5	27.8
3	22.7	21.0	0.4	0.8	21.5	5.6
4	13.1	10.6	—	0.1	9.8	1.4
5	12.1	5.6	—	—	4.4	0.2
Mean	2.7	2.4	0.2	0.1	2.3	1.3
SD	1.4	1.2	0.5	0.5	1.1	0.9
Total N	1013					

Further analysis showed that about 36 per cent of the respondents had 3 or more living children and about 35 per cent had 2 or more living sons. It is interesting to note that about 25 per cent had accepted family planning after the first child, and about 19 per cent had done so even without having had a son. Most of the respondents were contracepting for spacing births.

### Completed Family Size

The findings on completed family size obtained by adding the number of living children and additional desired children was encouraging, in that

56.5 per cent of the respondents were aspiring for a two-child family. About 27.9 per cent hoped to have three children, while those desiring a family size of four or more children was only about 15.6 per cent. The mean of completed family size was estimated at 2.7 (SD  $\pm$  .8). However, while interpreting these figures the readers are cautioned that the respondents are not representative of the population of the State as they belonged to a selected urban group which is educationally and economically better-off than the general population, and are motivated enough to seek family planning assistance from the clinic on their own. A recent survey carried out by ORG<sup>14</sup> reveals that completed family size for urban couples in Orissa is about 3.1.

### Son Preference

Numerous studies have indicated that in India, particularly in less developed states like Bihar, Uttar Pradesh, Orissa etc. there is a strong preference for sons, and the desire of couples in these states to have at least two sons is a definite hurdle in the way of efforts to achieve fertility decline. The findings of our attempt to gauge son preference among the respondents who, in this case, were self-motivated are presented in Table 3.

TABLE 3  
Popular sex combination of children and extent of son preference

Indicators of sex preference		Percentage
<i>Popular sex combination</i>		
Son	Daughter	
0	1	18.3
1	0	13.9
1	1	22.4
1	2	6.1
1	3+	3.4
2	0	11.4
2	1	11.5
2	2	3.8
Other combinations		9.2
Total N		1013
<i>Desire for additional children by number of sons</i>		
No son		75.1
1 son		30.6
2 or more sons		3.9
<i>Extent of son preference</i>		
One or more daughter(s) in excess of number of sons		29.1
Equal number of sons and daughters		27.4
One son in excess of number of daughters		26.3
Two or more sons in excess of number of daughters		17.2

Table 3 shows that only 18 per cent of the respondents who did not have a son but had at least one daughter had accepted family planning. Similarly, only about 14 per cent of those with one son and no daughter had adopted family planning. The proportion increased to 22 per cent among those with one son and one daughter. The table also indicates that overall, about 46 per cent of the respondents had opted for contraception after having one son and varying numbers of daughters. Another 27 per cent had accepted family planning after having at least two sons. Thus, even for these self-motivated urban women, having at least one son was an important deciding factor for accepting contraception.

The analysis further shows that about 75 per cent of the respondents who did not have any son were desirous of son(s). Thirty per cent of those who had one son were desirous of at least one more son and 4 per cent wished for additional son(s) even after having had 2 sons. This shows that even among educated and relatively economically better-off urban couples, the desire to have at least two living sons is quite strong.

Strong son preference is also reflected by the fact that about 44 per cent of the respondents had one or more son(s) in excess of the number of daughters at the time of acceptance of family planning. About 27 per cent had an equal number of sons and daughters, and 29 per cent had one or more daughters in excess of the number of the sons. However, the majority of these (62 per cent) reported to have accepted family planning for spacing purposes and had not yet completed their desired family size.

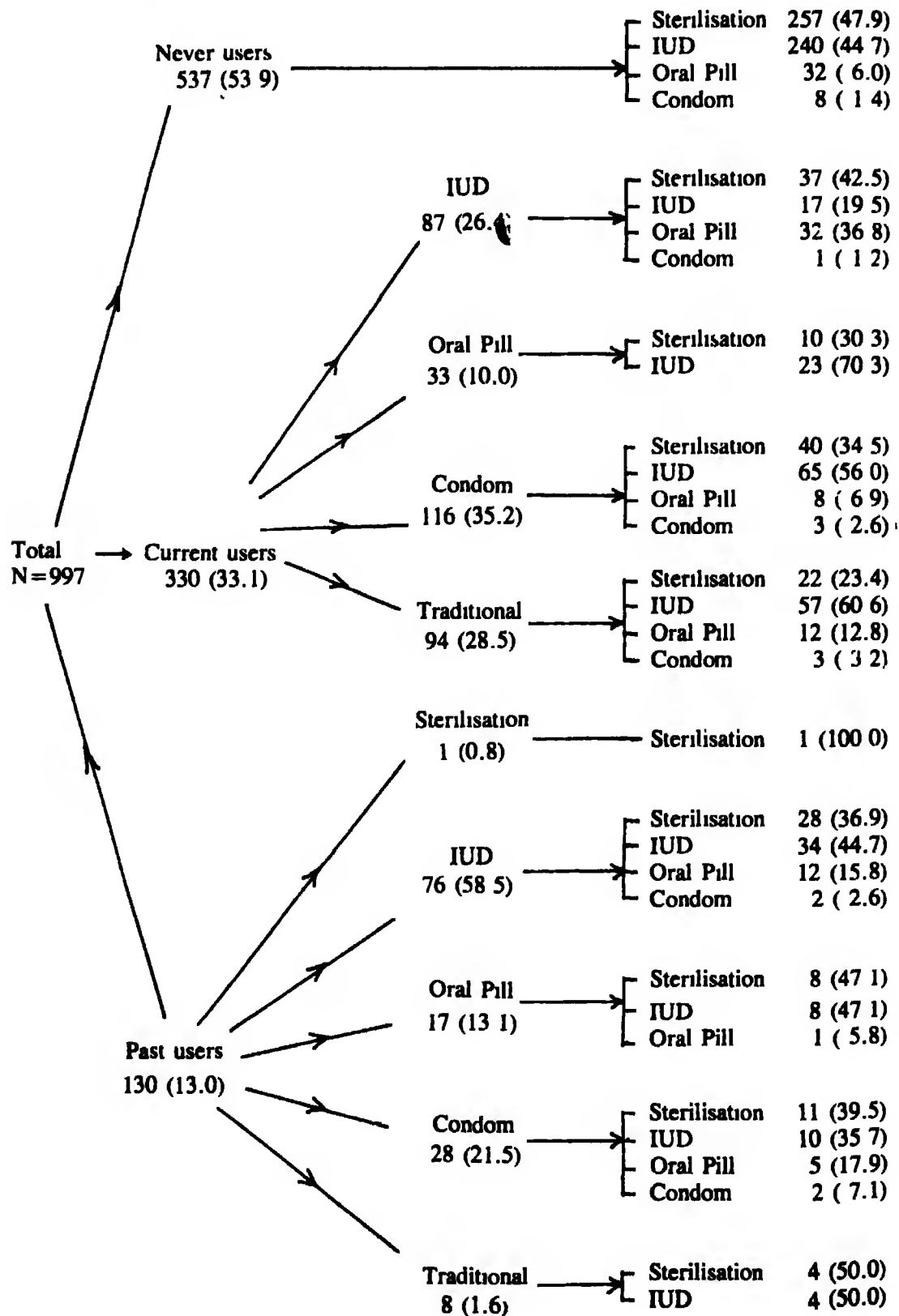
### **Family Planning Status at the Time of Method Acceptance**

An analysis of the family planning status of the respondents at the time when there were registered at the clinic revealed that out of 997 respondents, 537 (54 per cent) had never used any family planning method. Another 330 (33 per cent) couples were current users whereas the remaining 130 (13 per cent) were past users of contraceptives (Figure 1).

Among the current users, 26 per cent were using the IUD, 10 per cent were pill users, 35 per cent were using the condom, and the remaining (29 per cent) depended on traditional methods. The method chosen at the clinics by these respondents are also depicted in Figure 1. Of the 330 current users, 109 (33 per cent) opted for sterilisation, and the remaining 221 (67 per cent) changed over from one spacing method to another. Similarly, among the 130 past users, 51 (39 per cent) opted for sterilisation while the remaining 79 (61 per cent) preferred one or the other spacing method. In both the cases, that is, among the current and the past users, the IUD was the most preferred contraceptive. One reason for the high acceptance of IUD among the respondents could be the fact that other spacing methods, that is the pill and condom, can be easily bought from the market, and one need not come

FIGURE 1

Family planning status at the time of visiting the clinic and method accepted thereafter



to the clinic. This observation is supported by the distribution of current users among whom 35 per cent were using condoms and 10 per cent, the oral pills.

Further analysis of those who had discontinued the use of any method showed that 32 per cent had done so because they wanted to have a child (Table 4). Another one-third discontinued contraceptive use due to the associated side effects. About 9 per cent did not like the method and switched over to other contraceptives, while 7 per cent reported discontinuation due to pregnancy either because of careless use or failure of the contraceptive. An analysis of the reason given by specific method revealed that the main reasons for discontinuation among IUD users were side effects (51 per cent), desire for a child (36 per cent), and the period of IUD use (i.e. 3-5 years) was over (13 per cent). In the case of the pill, side effects (35 per cent) followed by desire for additional children (18 per cent) were mentioned as reasons for discontinuation, while condom users expressed a desire for additional children (29 per cent) followed by dislike of the method or switching over to another contraceptive (21 per cent), and husband's objection (21 per cent) as the major reasons. However, these percentages are based on a fairly small sample and should be interpreted with care.

TABLE 4  
Percent distribution of discontinuers by reason for discontinuation

Reason for discontinuation	IUD	Oral Pills	Condom	Traditional	Total
Want child	35.9	17.6	28.6	37.5	32.1
Became pregnant due to careless use/method failure	3.9	11.8	10.7	12.5	6.9
Not interested in the method/switching over	5.1	11.8	21.4	—	9.2
Stipulated period of IUD use is over	12.8	—	—	—	7.6
Side effects of method	51.3	35.3	—	—	35.1
Husband's objection	—	5.9	21.4	12.5	6.1
Could not go to PHC for resupply	—	5.9	3.6	—	1.5
Other	7.7	17.6	21.4	25.0	13.0
Do not know	—	—	7.1	12.5	2.3
N	78	17	28	8	131

Further analysis was made by cross tabulating previous experience of contraceptive use i.e. with the method used in the past or the method the women were using at the time of accepting a method at the clinic. The analysis is presented in Table 5. As can be seen from the table, half of the ~~may~~ users had opted for sterilisation because they had achieved their desired family size and wanted a permanent method. In case of spacing methods their temporariness in nature was often mentioned as the reason for adopting the contraceptive. Often, IUD was preferred to other spacing methods, if they wanted to space births for a longer period. Method-wise specific reasons for



**TABLE 5**  
**Distribution of respondents by reasons for switching over from the method accepted at the clinic**

FP status	Method accepted at the clinic				Total ever users
	Sterilisation	IUD	Pills	Condom	
Never user	Want permanent method to stop childbearing (257; 47.9) Incentive (13; 2.4) No side effects/physically safe (8; 1.5) Advice from others (4; 0.7) Other (6; 1.1)	Temporariness (121; 22.5) To maintain longer gap between births 63; 11.7) Do not want more children (45; 8.4) Difficulty in other methods (41; 7.6) No fear of failure (29; 5.4) Easy method (15, 2.8)	Temporariness (25; 4.7) Easy method (15, 2.8) No side effects (3, 0.6) Do not want more children (3; 0.6) Other (3, 0.6)	Temporariness (5; 0.9) Easy method (3, 0.6) No side effects (2; 0.4) To maintain longer gap between children (2; 0.4) Other (2; 0.4)  Other (14, 2.6)	537 (100.0)
IUD	N = (257; 47.9) Want permanent method to stop childbearing (65; 39.9) Incentives (10; 6.1) Easy to adopt (2; 1.2) Other (6; 3.7)	N = (240; 44.7) Not interested in an operation (21, 12.9) Do not want more children (15; 9.2) To maintain longer gap between births (11; 6.7) No fear of failure (7; 4.3) Easy to adopt/Temporari-ness (11; 6.7) Other (2; 4.0)	N = (32, 5.9) The method is not suitable (19; 11.7) Do not want more children (17, 10.4) Not interested in an operation (14; 8.6) To maintain gap (11, 6.7) Easy to adopt (9, 5.5) Other (7, 4.3)	N = (8; 1.5) Other methods do not suit her (2; 1.2) Do not want more children (2; 1.2) To maintain gap between births (1, 0.6)	163 (100.0)



**TABLE 5**  
**Distribution of respondents by reasons for switching over from the method accepted at the clinic**

FP status	Method accepted at the clinic				Total ever user
	Sterilisation	IUD	Pills	Condom	
Traditional methods	Want permanent method to stop childbearing (26; 25.5) Incentive ( 7; 6.9) Other ( 2; 2.0)	Temporariness (14; 13.7) To maintain longer gap between births (35; 34.3) Do not want more children (22; 21.6) Other spacing methods do not suit (3; 2.9) Other (8, 7.8)	To maintain gap (4; 3.9) Do not want more children (3; 2.9) Easy to adopt (3; 2.9) Other (4; 3.9)	No side effects (2; 2.0) Easy method (2; 2.0) Other (2; 2.0)	102 (100.0)
	N = (26; 25.5)	N = (61; 59.8)	N = (12; 11.8)	N = (3; 2.9)	
Total no. of acceptors 417	458	102	19		996

The figures in brackets denote the number of respondents followed by the percentage

switching from one to the other reveals that those who had switched over from IUD to sterilisation did so mainly for accepting a permanent method. In a few cases, incentives proved to be an added factor. Past users of IUD were found to resume IUD use mainly because of the fear of the sterilisation operation and/or because they considered it an effective method to stop childbearing (9 per cent). Those who switched over from the IUD to the pill did so mainly because the IUD did not suit them (12 per cent) or because they were not interested in a permanent method (9 per cent). An analysis of those who changed over from condoms to another method showed an almost similar pattern i.e. sterilisation was preferred because it was an effective permanent method, and the IUD, in order to maintain longer gaps or even to stop childbearing. In general, as the table shows, those who switched methods either preferred a permanent method or accepted the IUD because of its semi-permanency and the fact that it is free from coitus-related problems.

### Exposure to Unwanted Pregnancy

An attempt was made to estimate the number of months of exposure to the risk of unwanted pregnancy at the time of the respondents' registration for contraception. The data is presented in Table 6. In order to arrive at a clearer understanding, respondents who had used a contraceptive after the first delivery and had stopped using them for some time before coming to the clinic again for a method, were separated from those who had not used any family planning method after the delivery of the last child.

TABLE 6

Percentage distribution by number of months of exposure to unwanted pregnancy

Number of months	Exposed to risk of pregnancy after last delivery	Exposed to risk of pregnancy after stopping use of last method
1-3	20.5	63.5
4-6	26.5	11.6
7-9	11.7	1.9
10-12	13.6	9.6
13-24	12.5	3.8
25-36	4.9	—
37-48	4.2	1.9
49-60	4.6	1.9
61+	6.5	5.8
Mean	15.3	12.2
SD±	23.3	27.2
N	266	52

As seen from the table, about 58 per cent of the respondents were found

to have accepted a method within 6 months from the date when their first pregnancy had ended. As all these respondents were breastfeeding their child, it would perhaps not be wrong to assume that all of them had accepted the method during the postpartum amenorrhoeic period. In other words, out of 627 such women, 361 (58 per cent) had accepted a method before getting exposed to any risk of pregnancy. However, the rest 266 (42 per cent) had remained exposed to an unwanted pregnancy for different lengths of time ranging from one to 60 or more months. Before calculating the average months of exposure to unwanted pregnancy for these respondents, the expected average postpartum amenorrhoeic period (6 months) was subtracted. The average length of exposure then worked out to 15.3 months.

A similar exercise carried out for those (N = 52) who had adopted a family planning method after their last pregnancy had ended but had discontinued use, showed that at the time of their visit to the clinic, about 64 per cent had stopped contracepting only 1-3 months prior to the date of registration. Another 12 per cent had not been using any contraceptives for the last 4-6 months, and about 10 per cent each had been exposed to an unwanted pregnancy for 10-12 months prior to their visit to the clinic. On average then these respondents had been exposed to the risk of pregnancy for about 12 months. Thus the analysis shows that among the total acceptors (N=1013), 318 (31 per cent) had been exposed to the risk of unwanted pregnancy for various durations before accepting contraception at the clinics; the mean duration was about 14.8 months. A note of caution however, needs to be given in that in the absence of detailed information on the use of natural family planning methods, it was not clear whether all these women were actually exposed to the risk of unwanted pregnancy.

### Perceived Best Method

Table 7 presents the responses to the question of which method was

**TABLE 7**  
**Percent distribution by reasons for**  
**considering a particular method as the best**

Reason for considering a method as the best	Sterilisation	IUD	Pills	Condom	Traditional
Permanent method	96.6	2.1	—	—	3.7
Temporary method to maintain longer gap	0.5	68.0	14.3	8.8	—
Easily reversible	0.1	16.5	—	2.9	—
No side effects	5.4	25.8	38.1	70.6	51.9
Physically safe/comfortable	8.0	5.1	4.8	47.1	14.8
Easy to adopt	3.4	27.8	76.2	20.6	22.2
No fear of failure	5.8	19.6	23.8	2.9	14.8
Difficulty with other methods	0.5	2.1	—	—	7.4
Incentives given	2.4	—	—	—	—
Other	1.9	1.0	4.8	11.8	7.4
N	834	97	21	34	27
	(82.4)	(9.5)	(2.0)	(3.3)	(2.7)

considered as the best method of family planning and why. The findings indicated that a majority of the respondents - 834 (82 per cent) were of the opinion that sterilisation is the best method as it is permanent (97 per cent), physically safe and comfortable (8 per cent), and carries no fear of failure (6 per cent). About 97 respondents (10 per cent) mentioned the IUD as the best method mainly because of its reversibility in terms of maintaining a longer gap between births (68 per cent), being easy to adopt (28 per cent), and with no side effects (26 per cent) or fear of failure (20 per cent). Only 2 to 3 per cent of the women each thought the oral pill, condom and traditional methods as best (Table 6). This indicates that despite the recent national emphasis on promoting spacing methods, even in urban areas, sterilisation has remained the most popular method.

Further analysis as to how many of the respondents had accepted the method which they considered best revealed that while 82 per cent considered sterilisation as the best method, only 39 per cent had actually accepted it (Table 8). The rest adopted one or the other spacing method. An analysis of the latter respondents revealed that most of them (approximately 30 per cent, see Table 10) had not yet achieved their desired family size and were using a spacing method to delay the next pregnancy (Table 8).

TABLE 8

Method considered as the best and the method actually accepted

Considered best method	Method accepted			Total
	Sterilisation (%)	Spacing (%)	NA (%)	
Sterilisation	39.4	42.3	0.7	82.3(834)
Spacing	2.1	14.9	0.6	17.7(179)
N	420	579	14	(100.0)1013

### Choice of Contraceptive

As the study had a pre-assigned sample for each contraceptive to be registered and subsequently followed up, it took different durations of time to get the required sample size for each contraceptive. For example, the required number of tubectomy and IUD cases were registered within a much shorter period of time than pill, condom and vasectomy cases. In fact, the assigned targets for registering all the three methods could not be achieved even during the one and half year study period. Thus, to determine which method was more preferred by the respondents a comparison of the number of acceptors of various methods registered during a fixed reference period, say after three months, six months, nine months or twelve months from the date of initiation of the registration was undertaken. This analysis has been

presented in Table 9.

As can be seen from the table, at the end of 3, 6, 9 and 12 months, a total of 92, 306, 461 and 610 couples respectively had availed of the family planning services offered by the study clinics. A break-up by method choice revealed that at all points of time, the use pattern of contraceptives was by and large consistent. At the end of 12 months, out of the 610 respondents, 43 per cent had accepted the IUD and 40 per cent tubectomy. These two methods taken together constituted 83 per cent of the total. The remaining small proportion was distributed among vasectomy (5 per cent), pill (8 per cent) and condom (4 per cent) acceptors. Thus, apparently the two methods which are almost equally popular are tubectomy and the IUD. However, this conclusion should be viewed with caution at least in the case of the oral pill and condom, since many couples may prefer to purchase these contraceptives from the market rather than to take their supplies from a clinic. On the other hand, those opting for tubectomy or the IUD have no option but to seek assistance from a clinic. To an extent, this is supported by the analysis presented in the previous section on the family planning status of the couples at the time of registration. As we have seen, of the current users, 35 per cent were using condoms and 10 per cent depended on the pill.

TABLE 9

Distribution of respondents by contraceptive accepted at the end of 3, 6, 9 and 12 months from the time of registration

Method	Percentage accepted during the first			
	3 months	6 months	9 months	12 months
Vasectomy	5.4	6.2	4.9	5.2
Tubectomy	37.0	40.5	43.3	40.1
IUD	50.0	41.8	40.7	43.1
Condom	6.5	4.2	3.3	3.1
Pills	1.1	7.1	7.5	8.3
N	92	306	461	610

### Reasons for Choosing a Particular Contraceptive

Before assessing the respondent's reason(s) for choosing a particular contraceptive, she was asked whether the method accepted by her at the clinic was chosen after she had been counselled by the clinic staff or whether she had come to the clinic with a prefixed idea about the method which she would like to adopt. The study revealed that out of the 1013 respondents, as many as 1006 (99.3 per cent) had come with a particular method in mind and had adopted the same method. Only 7 respondents had not made up their mind about the method they were going to adopt before coming to the clinic.

Probing into the reasons for accepting a particular method revealed that

sterilisation was accepted mainly because the couples had achieved their desired family size (50 per cent). However, a small proportion (7 per cent) of the respondents had adopted sterilisation because they found other methods difficult to use, while for yet another 9 per cent of the respondents, the incentive money had been a deciding factor for accepting sterilisation (Table 10).

TABLE 10

Percent distribution of respondents by reasons given for choosing a particular method

Reason for choosing a particular method	Sterilisation	IUD	Oral Pill	Condom	Traditional
Permanent method	57.9	0.2	—	—	—
Do not want another child	49.5	26.0	25.5	15.8	—
Temporary method to maintain larger gap between births	0.2	41.5	40.0	36.8	—
Easy method	0.2	5.5	27.5	26.3	—
For incentives	9.1	—	—	—	—
No fear of failure	0.5	10.9	—	—	—
Easily reversible	—	2.0	—	—	—
No side effects	2.6	2.8	6.9	26.3	—
Difficulty with other methods	7.2	15.5	21.6	26.3	—
Advise from others	1.7	2.0	4.9	—	—
Other	2.6	6.1	6.9	15.8	—
Total (N)	(427)	(458)	(102)	(19)	—

In the case of the IUD, its 'temporariness' (42 per cent) and confidence about its effectiveness in affording protection from unwanted pregnancy (11 per cent) had been the two chief considerations for acceptance. About 16 per cent of the IUD acceptors felt that oral pills and condoms are too cumbersome to use\*. Oral pill acceptors ascribed the 'temporariness' of the method (40 per cent), ease of usage (28 per cent), and perceived difficulties in using other contraceptives (22 per cent) as the main factors favouring their choice.

There were very few acceptors of the condom (N=19) and the main reasons for preferring it were its 'temporariness' (37 per cent), ease of usage (26 per cent), lack of side effects (26 per cent) and perceived difficulties in using other contraceptives (26 per cent).

### Contraceptive Goals

With a view to assess the goal(s) for accepting family planning an attempt was made to see whether the couples had done so for reasons of spacing or limiting childbearing. As Table 11 indicates, of 999 respondents for

\* In the case of IUD acceptors, 'difficulties with other methods' include the daily use of pills, or the use of a condom during every intercourse etc. whereas in the case of oral pills and condom users certain side effects and lack of sexual pleasure respectively were mentioned as the difficulties.



whom information was available, 702 or 70 per cent did not want any additional children. However, of the 702 couples, only 420 (60 per cent) had accepted sterilisation while the rest (282) had adopted a spacing method, mainly the IUD (30 per cent) and oral pill (9 per cent). This indicates that 70 per cent of the respondents had adopted family planning to stop childbearing and instead of undergoing sterilisation, as many as 40 per cent of them had preferred to use a spacing method.

**TABLE 11**  
**Method choice of respondents by desire of additional children**

No. of additional children desired	Method accepted (%)					Total(N)
	Vas	Tub.	IUD	Oral Pill	Condom	
0	5.9	53.9	29.7	9.3	1.2	702( 70.3)
1 or more	—	—	84.2	12.5	3.3	297( 29.7)
N						999(100.0)

Among the 297 respondents who were still desirous of having additional children, the majority (84 per cent) had accepted the IUD followed by oral pills (13 per cent).

### **Quality of Counselling and Examination at the Clinic**

Table 12 shows that during counselling only about 14 per cent of the respondents were informed about the availability of other family planning methods. This low proportion may be attributed to the fact that before coming to the clinic most of the respondents had already decided which method they were going to adopt and hence the clinic staff might not have felt it necessary to tell them about other contraceptives. However, it is rather disappointing to note that practically none of the respondents were informed about the initial possible side effects of the method chosen by them. Similarly, only 29 per cent of the respondents were told about the effectiveness or chances of failure of the selected method. This shows that the quality of counselling in the study clinics is very poor and no attempt is made to provide complete information either about all the available methods or even about the method selected by the client. In other words, the respondents are not prepared mentally to tolerate some of the minor side effects, such as nausea, vomiting, spotting, bleeding etc. which they might experience in the initial period of acceptance. Studies have shown that discontinuation of spacing methods is much higher among acceptors who are not properly educated about the method than among those who are properly informed about possible initial side effects and the measures to be taken.<sup>15</sup> It is also well known that a dissatisfied

acceptor is a permanent source of discouragement among his/her own peer group, at least for that specific method.

**TABLE 12**  
**Quality of counselling and examination at provided clinic**

Percent respondents informed about more than one method/other choices	13.9
Vasectomy	0.5
Tubectomy	2.8
IUD	8.3
Pill	1.9
Condom	0.3
Percent who were informed about possible side effects	0.0
Percent who were informed about the effectiveness/failure of the method	29.1
Vasectomy	17.1*
Tubectomy	38.5*
IUD	25.5*
Pill	17.6*
Condom	21.1*
Percent reporting that privacy was maintained	98.1
Percent reporting they felt comfortable (not embarrassed)	99.4
Percent reporting satisfaction with the time spent with doctor/health staff for advice	99.8

\* Percentages calculated on the basis of those who had accepted the particular method

Further probing regarding the counselling and other physical arrangements in the clinics revealed that except for one or two cases practically all the respondents (98-99 per cent) were satisfied with the privacy provided during the counselling session, reported no feeling of embarrassment and expressed satisfaction with the time given to them by the doctor/health staff for advice.

### **Observations from the First Follow-Up**

The first follow-up of the respondents carried out three months after the acceptance of the method revealed that most of them were continuing the method. The continuation rate at the end of the third month was estimated to be 98.6 for the IUD, 89.4 for the pill, and 71.4 for the condom. This is quite encouraging, particularly in the case of the pill, wherein the drop out rate during the initial two/three months has been reported to be substantial.<sup>15</sup> One of the possible reasons for such a high continuation rate could be the high motivational level of the respondents as judged by the fact that three of them who conceived subsequently, due to irregular use of the pill, decided to go for an abortion. Further, most of the respondents were also well educated, and it has been observed that education not only gives a

certain amount of autonomy to the woman to control her reproduction but also helps her to use contraceptives more efficiently and effectively.

Among the ten pill users who had discontinued its use, 6 had accepted sterilisation and the rest had stopped contraception altogether. Discontinuation of contraception was greater among condom users, where 8 of the 28 acceptors had dropped out. In all, 18 respondents had stopped practising family planning altogether - 6 of these were IUD acceptors, 4 were pill users and the remaining 8 had chosen the condom at the time of registration. The main reasons for discontinuation were side effects ( $N=7$ ) and lack of sexual pleasure ( $N=6$ ), though 3 of the 6 IUD acceptors had discontinued the IUD on the doctor's advice because of excessive bleeding. In three cases pregnancy was reported due to irregular method use (condom - 2; pills - 1). The decision to discontinue was taken independently by the wife ( $N=5$ ), husband ( $N=6$ ) or jointly ( $N=8$ ).

Further probing revealed that 62 (14 per cent) of the 432 IUD acceptors and 31 (8 per cent) of the 367 tubectomy acceptors had faced some problem—excessive bleeding, irregular menses, back pain and white discharge in the case of IUD acceptors, and infection of the stitches in the case of tubectomy acceptors. Generally, follow-up services were very poor and the majority of the respondents reported that they had not been visited by any social worker or health assistant. However, those who had suffered from after effects, had gone to the clinic themselves and had been provided proper treatment and guidance.

### **Lessons for the Family Planning Programme**

The study reveals that even in a city like Bhubaneswar, a substantial proportion - about 16 per cent of the couples still favour large families and aspire to have four or more children. Son bias is strong and about one-third (34 per cent) want at least two living sons.

Even in urban areas, the concept of family planning for spacing is very limited, and the majority of the acceptors (70 per cent) who had come to the clinics for family planning wished to stop childbearing; while about 60 per cent of them accepted sterilisation, the remaining 40 per cent preferred to use a spacing method, mostly the IUD. Fiftyfour per cent of the respondents who had come to the clinics for planning their family had never used a method before, and the majority of them wanted to adopt contraception because they had already achieved their desired family size. It was also interesting to note that most of the respondents had already decided as to which method they wanted to adopt before coming to the clinic and practically all of them adopted that method. The impact of counselling on choice of contraceptive could not be studied; as indicated earlier, counselling was almost non-existent.

While the majority (82 per cent) of the respondents perceived sterilisa-

tion as the best method, a small proportion (10 per cent) considered IUD as the best contraceptive. The main reasons for considering sterilisation as the best method were its permanency, easy adoption and effectiveness in protecting against unwanted pregnancies. The IUD was liked because of its reversibility, effectiveness and non-association with intercourse.

It is important to note that 31 per cent of the respondents had come to the clinic for adopting family planning after remaining exposed to the risk of unwanted pregnancy for various durations (mean duration, about 15 months).

At the end of the third month of acceptance, the continuation rate for the IUD, pill and condom was estimated to be 98.6, 89.4 and 71.4 respectively. The higher drop out in case of condoms was mainly because the husbands associated it with lack of sexual pleasure.

The study also reveals that the quality of counselling at the public clinics is very poor. Most of the respondents are neither informed about other family planning methods nor told about the possible temporary side effects. Thus, no attempt is made to prepare them mentally to tolerate some of the possible initial side effects. This could easily lead to a higher discontinuation rate of spacing methods. Similarly, follow-up of the acceptors is very poor. However, it is encouraging to note that the sitting arrangement, time given for counselling etc. are to the satisfaction of the acceptor. Also, respondents who sought assistance for after effects received satisfactory attention and treatment.

The study underlines the urgent need for interventions which could help in reducing the general family size norm, which even in urban areas, is fairly large. It is also necessary to find ways and means to reduce son preference which is a major hurdle in reducing fertility. To ensure better continuation rates, the quality of counselling and follow up care needs to be improved. Cleanliness of the operation theatre and proper sterilisation of instruments require special attention to ensure aseptic conditions as 16 out of the 367 sterilisation acceptors developed infection at the site of operation, and complained about it during the follow-up interview.

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# **MEDICAL TERMINATION OF PREGNANCY AND CONCURRENT CONTRACEPTIVE ACCEPTANCE**

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**and**

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## **INTRODUCTION**

Since time immemorial the procedure of terminating an unwanted pregnancy was known to most societies and cultures. This was inspite of moral or legal sanctions and often at considerable risk to the mother. The methods varied from the use of crude invasive methods of inserting sticks to perforate the amniotic sac to the chewing of toxic herbs and roots. However, as the years passed by there was a transition in the technology of induced abortion from the crude methods to more sophisticated and safer ones conducted under professional hands. Similarly, the need for resorting to abortion changed from an individual social or medical need to a more gigantic one of demographics and women's rights.

Medical termination of pregnancy (MTP) first took legal shape, on medical grounds in Russia, in 1920. Thereafter, in the 1970s, there was a surge to legalise abortion in many nations. The abortion act varies from country to country, with over half the world's population living in countries where abortion laws are permissive, about one fourth in countries that have restrictive laws, and another one fourth in countries where abortion is illegal or is permitted only to save maternal lives<sup>1</sup>. Within the same country also, the Act varies from time to time and from state to state depending upon the prevailing political, religious and socio-cultural tempo. Perhaps today, induced abortion is the most controversial procedure with strong pro and anti movements. Nevertheless, as long as the need is felt to terminate an unwanted pregnancy, women will continue to resort to induced abortion regardless of the existing moral or legal status, especially when the present temporary methods of contraception are not completely effective. It has been illustrated that in the absence of contraceptive methods each woman would require an average of 9 to 10 abortions in her lifetime. If on the other hand, couples are to use 95 per cent effective contraceptive methods, 7 out of 10 women would require 1 abortion at some point in their lives<sup>2</sup>. Estimates show that every year between 40 and 60 million

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women seek termination of an unwanted pregnancy, worldwide<sup>1</sup>.

In India, abortion was illegal except to save the life of the pregnant woman. However, the high incidence of clandestine or illegal abortions estimated to be around 4 million per annum and the associated health hazards, loss of lives and wastage of medical infrastructure made the government reexamine the law<sup>4</sup>. Thus, the MTP Act was passed by the Parliament in 1971 and was implemented in 1972. Since abortion is a therapeutic procedure, it can be presumed that a positive attitude toward MTP would be equated with a positive attitude toward contraception. Several studies in India have shown that MTP influences subsequent contraceptive choice<sup>4-7</sup>. Therefore, a concerted effort is being made through counselling to make MTP seekers accept a method of contraception, particularly in the clinics promoting family planning.

This paper attempts to determine among women the acceptability of a permanent or temporary contraceptive method after undergoing MTP in relation to intervening variables like socio-demographic characteristics, awareness of contraceptive methods, past contraceptive use, and quality of counselling and services.

### **Study Design and Limitations**

A total of 5574 women using the services of the clinics operated by the Family Planning Association of India (FPAI) at its Branches in Lucknow and Indore, and its Calcutta Area Project, between 1986 and 1988, were included in a study of contraceptive use acceptability undertaken by the Association\*. Among them, 1042 (18.7 per cent) who underwent medical termination of pregnancy and concurrently accepted a method of contraception were included in this analysis. Of these women, 647 (62.1 per cent) accepted sterilisation (permanent method), and 395 accepted a temporary method: 379 (36.4 per cent) accepted the IUD, and 16 (1.5 per cent) another method of contraception. Women who did not accept a contraceptive method post-MTP were excluded from the study.

Admission data included sociodemographic characteristics, past obstetric history, knowledge of contraceptive methods and previous contraceptive use, opinion of best contraceptive method and perception of FPAI services. Pre- and post-consultation interviews were conducted. Pre-consultation interviews were conducted immediately after registration but before the clients were provided information or services by the clinic staff. After the pre-consultation interview, the clients were sent to the clinic staff/doctor for consultation, and following the consultation, when they were ready to go home, they were

\*A similar study was conducted at Guatemala, Hong Kong, Nepal, Trinidad and Tobago, Jordan and Kenya by the International Planned Parenthood Federation, London.

again interviewed for a post-consultation interview. The clients were followed up for a period of one year after choosing a contraceptive method, post-abortion. However, this data has not been included in this paper and will be reported later.

Standard forms, definitions and criteria for conducting the study were used at all the study centres. Tests of significance were computed using the Chi square and 't' test at the 0.05 level of significance.

MTP acceptors who were using a contraceptive method immediately prior to the current pregnancy were defined as "immediate past users", while ever users were those couples who had used a contraceptive method in the past before coming to the clinic, but did not include immediate past users. The "chosen" method was the method a client chose as a result of the visit to the clinic which may or may not be the method she had in mind when she visited the clinic or the method she obtained at that visit. All clients in the study obtained the "chosen" method.

The quality of counselling was evaluated on a 6-point scale ranging from 0 to 5 rated as very poor, poor, fair, good, very good and excellent. This was measured by including information received on other methods, effectiveness of the method obtained, the possible side effects and/or complications of the method, instructions on how to use the method obtained, and what to do in case problems arise by using the obtained method. If the client reported that all this information was given, the quality of counselling was rated as excellent "6". If, however, it was reported that one part of the information was missing then the quality of counselling was graded as "good" or "5", and so on.

This analysis being part of a larger study has a few drawbacks. The study centres at Lucknow and Indore included all women accepting sterilisation. At Calcutta, however, since the number of cases accepting sterilisation would have exceeded the stipulated total study size of 2000 clients at each centre, it was decided to include every alternate sterilisation acceptor in order to include a fair number of clients accepting other methods. Thus, all post-MTP sterilisation cases are not reported in this paper. Other limitations include the non-recording of the reason for seeking abortion or for not accepting a method of contraception after undergoing abortion. Data on when the last pregnancy ended, and the outcome of the last pregnancy have also not been included due to problems of data recording. Again, the study is limited to post-MTP contraceptive acceptors in urban areas and does not cover women seeking abortion in rural areas where contraceptive availability is low and the incidence of MTP may be presumably high.

## **Results**

### ***Socio-demographic Characteristics***

Most of the MTP acceptors in this study were between 20-29 years of age,



with significantly older women (mean = 30.0 years) accepting a permanent method and younger women (mean = 25.1 years) accepting a temporary method of contraception after MTP (Table 1).

**TABLE 1**  
Distribution of women adopting post-MTP contraception by  
socio-demographic characteristics

Characteristic	Method accepted post-MTP		Total
	Permanent	Temporary	
<i>Age (years)</i>	N = 647	N = 395	N = 1042
19	1 ( 0.2)	23 ( 5.8)	24 ( 2.3)
20-24	55 ( 8.5)	163 (41.3)	218 (20.9)
25-29	265 (41.0)	162 (41.0)	427 (41.0)
30-34	220 (34.0)	37 ( 9.4)	257 (24.7)
35-39	89 (13.8)	9 ( 2.3)	98 ( 9.4)
40+	17 ( 2.6)	1 ( 0.3)	18 ( 1.7)
Mean	30.0	25.1	28.2
<i>Literacy level</i>			
Illiterate	342 (52.9)	103 (26.1)	445 (42.7)
Can read	21 ( 3.2)	5 ( 1.3)	26 ( 2.5)
4-5 years' schooling	85 (13.1)	43 (10.9)	128 (12.3)
6-9 years' schooling	101 (15.6)	62 (15.7)	163 (15.6)
10+ years' schooling	98 (15.1)	182 (46.1)	280 (26.9)
<i>Occupation</i>			
Not earning an income	564 (87.2)	354 (89.6)	918 (88.1)
Salaried work, outside home	39 ( 6.0)	29 ( 7.3)	68 ( 6.5)
Earning an income	43 ( 6.6)	6 ( 1.5)	49 ( 4.7)
Other	1 ( 0.2)	6 ( 1.5)	7 ( 0.7)
<i>Religion</i>			
Hindu	531 (82.1)	336 (85.1)	867 (83.2)
Muslim	104 (16.1)	47 (11.9)	151 (14.5)
Christian	10 ( 1.5)	6 ( 1.5)	16 ( 1.5)
Other	2 ( 0.3)	6 ( 1.5)	8 ( 0.8)

Note: Only known cases are reported. Unknown cases are excluded from this and subsequent tables.

Only 2.3 per cent of the MTP acceptors were in their teens. While 42.7 per cent of them were totally illiterate, an equal proportion had received primary school education or above. Among the illiterate MTP acceptors, those who had accepted a permanent method were twice as many as those who had taken a temporary one. The majority (80.4 per cent) were from urban areas, and not earning an income (88.1 per cent). Although over 80 per cent of the MTP seekers were Hindu, nearly 15 per cent were Muslim and 1.5

per cent Christian. Almost all (99.2 per cent) were currently married; however, four each were never married and formerly married.

### **Age at Marriage, Past Obstetric History and Desire for Additional Children**

Almost 60 per cent of the MTP acceptors had married at an early age (mean = 17.4 years), though their first pregnancy was at a more mature age (mean = 21.4 years). A little over half reported to have been in their teens at the time of their first pregnancy. Further, respondents opting for post-MTP sterilisation were found to be significantly younger when they got married as also when they conceived for the first time than those who did not opt for sterilisation (Table 2).

Over half (55.9 per cent) of the MTP acceptors had had four or more pregnancies and nearly half (47.9 per cent) had 3 or more living children (Table 2). Only two were primigravid and seven had no living child. The average MTP acceptor had experienced more than three previous pregnancies, and had about three living children. Women accepting sterilisation had on average 3 or more living children. However, one woman had no living child and five had only one living child. While 60.7 per cent of the MTP acceptors had both living sons as well as daughters, 24.2 per cent had only sons and 14.4 per cent had only daughters. A higher proportion of MTP acceptors who opted for a permanent family planning method after the MTP, had children of both sexes than had acceptors of a temporary method. These differences were statistically significant. Over half (539 or 52.6 per cent) of the MTP acceptors were breastfeeding their last child at the time of their visit to the clinic; of these almost half - 46.3 per cent - underwent sterilisation following the MTP, while the rest chose a spacing method.

Nearly three fourths of the MTP acceptors did not want another child. While the vast majority (99.5 per cent) who did not desire additional children underwent sterilisation, half of those who accepted temporary methods desired at least one additional child. However, about 22.5 per cent of those who accepted a temporary method did not desire additional children (Table 2).

Again, the majority (89 per cent) of the MTP acceptors who did not want additional children chose a terminal method, while 87.5 per cent of those who wanted at least one more child chose a method for delaying the next conception (Table 2). Safety was a matter of concern for 3 per cent of the MTP acceptors who did not want additional children and 2.0 per cent and 2.3 per cent who wanted one and two or more children, respectively. About 6.4 per cent of the MTP acceptors who did not express the number of additional children desired depended upon the health personnel's advice for choosing the contraceptive method, and chose a temporary method. An inverse positive relationship was found between these women and the number of living

TABLE 2

Distribution of women accepting post-MTP contraception by age at marriage and reproductive history

Reproductive History	Method accepted post-MTP		Total
	Permanent	Temporary	
<i>Age at marriage</i>	N=647	N=391	N=1038
15	295 (45.6)	85 (21.7)	380 (36.6)
16-18	237 (36.6)	135 (34.5)	372 (35.8)
19+	115 (17.8)	171 (43.7)	286 (27.5)
Mean	16.6	18.9	17.4
<i>Age at first pregnancy</i>	N=647	N=395	N=1042
19	393 (60.7)	140 (36.9)	533 (51.2)
20-29	225 (34.8)	212 (55.9)	437 (41.9)
30-39	28 (4.3)	40 (10.6)	68 (6.5)
40+	1 (0.2)	3 (0.8)	4 (0.4)
Mean	20.4	23.0	21.4
<i>Number of pregnancies</i>	N=647	N=395	N=1042
Not previously pregnant	2 (0.3)	0 (0.0)	2 (0.2)
1	0 (0.0)	15 (3.8)	15 (1.4)
2	10 (1.5)	150 (38.0)	160 (15.4)
3	111 (17.2)	172 (43.5)	283 (27.2)
4+	524 (81.0)	58 (14.7)	582 (55.9)
Mean	3.8	2.7	3.4
<i>Number of living children</i>			
0	1 (0.2)	6 (1.5)	7 (0.7)
1	5 (0.8)	179 (45.3)	184 (17.7)
2	153 (23.6)	198 (50.1)	351 (33.7)
3	277 (42.8)	10 (2.5)	287 (27.5)
4+	211 (32.6)	2 (0.6)	213 (20.4)
Mean	3.2	1.6	2.6
<i>Sex of living children</i>			
No child	1 (0.2)	6 (1.5)	7 (0.7)
Male only	110 (17.0)	142 (35.9)	252 (24.2)
Female only	31 (4.8)	119 (30.1)	150 (14.4)
Both male & female	505 (78.1)	128 (32.4)	633 (60.7)
<i>Number of additional children wanted</i>			
None	644 (99.5)	89 (22.5)	733 (70.3)
1	1 (0.2)	198 (50.1)	199 (19.1)
2	2 (0.3)	37 (9.4)	39 (3.7)
3+	0 (0.0)	4 (1.0)	4 (0.4)
Other*	0 (0.0)	67 (17.0)	67 (17.0)

\* "Other" includes "Do not know", "Depends on the sex of the next child", or "Husband decides".

children.

### Knowledge of Family Planning

The MTP acceptors in this study had a fairly good knowledge of contraceptive methods. At least one method was known to 84 per cent of the clients. The condom, IUD, and female sterilisation were by far the most widely known methods, each being known by over 60 per cent of the MTP acceptors; over three-fourths of the MTP acceptors who accepted sterilisation reported to have heard of it (Table 3). Similarly, a higher percentage of women who accepted a temporary method post-MTP, had heard of the IUD as compared to those who accepted sterilisation after MTP.

**TABLE 3**  
**Distribution of MTP acceptors accepting post-MTP**  
**contraception by knowledge of family planning methods**

FP Knowledge	Method accepted post-MTP		Total
	Permanent	Temporary	
<i>Number of methods mentioned</i>	<i>N=647</i>	<i>N=395</i>	<i>N=1042</i>
0	110 (17.0)	57 (14.4)	167 (16.0)
1	58 (9.0)	17 (4.3)	75 (7.2)
2	76 (11.7)	85 (21.5)	161 (15.5)
3	117 (18.1)	110 (27.8)	227 (21.8)
4	160 (24.7)	60 (15.2)	220 (21.1)
5+	126 (19.5)	66 (16.7)	192 (18.4)
<i>Methods mentioned</i>			
None	110 (17.0)	57 (14.4)	167 (16.0)
Oral contraceptive	310 (47.9)	204 (51.6)	514 (49.3)
IUD	341 (52.7)	322 (81.5)	663 (63.6)
Condom	400 (61.8)	288 (72.9)	688 (66.0)
Female sterilisation	508 (78.5)	144 (36.5)	652 (62.6)
Other	60 (9.3)	45 (11.4)	105 (10.1)
<i>Source of information</i>			
None	40 (6.2)	24 (6.1)	64 (6.1)
Friend/relative	507 (78.4)	301 (76.2)	808 (77.5)
Radio	445 (68.8)	300 (75.9)	745 (71.5)
Posters	352 (54.4)	227 (57.5)	579 (55.6)
Television	289 (44.7)	241 (61.0)	530 (50.9)
FP worker	296 (45.7)	100 (25.3)	396 (38.0)
Newspaper/magazine	143 (22.1)	174 (44.1)	317 (30.4)
Medical/paramedical staff	155 (24.0)	105 (26.6)	260 (25.0)
Pamphlets	87 (13.4)	99 (25.1)	186 (17.9)
Exhibitions	83 (12.8)	33 (8.4)	116 (11.1)
Other	52 (8.0)	25 (6.3)	77 (7.4)

As Table 3 indicates, the main sources of information about contraceptive methods were friends/relatives (77.5 per cent), the radio (71.5 per cent) and television (50.9 per cent), and posters (55.6 per cent). Other sources mentioned included the family planning worker (38.0 per cent), newspapers/magazines (30.4 per cent), medical personnel (25.0 per cent), and pamphlets (17.9 per cent). While there was no difference between the two groups as regards the type of source from which family planning information had been received, a higher percentage of MTP acceptors who accepted a temporary method mentioned the television, newspapers or magazines, and pamphlets as their source; a greater proportion of those who accepted a permanent method, mentioned the family planning worker and exhibitions. Only sixty four (6.1 per cent) clients could not tell from where they received the information.

### **Previous Contraceptive Use**

#### ***Immediate Past Use***

Seventy seven (7.5 per cent) MTP acceptors were using a contraceptive method at the time when they became pregnant. Fifty nine (5.7 per cent) MTP acceptors reported that their partners were using condoms, ten MTP acceptors were using oral contraceptives and five were IUD users. Other methods were used by the remaining three MTP acceptors. Over half (53.2 per cent) of these 77 MTP acceptors opted for a permanent method after the MTP, while the rest continued with a spacing method.

#### ***Method Ever Used***

Over a third (362 or 34.7 per cent) of the MTP acceptors had used at least one contraceptive method before their visit to the clinic, though not immediately prior to the current pregnancy. A significantly higher percentage of the MTP acceptors who had ever used oral contraceptives or had an IUD inserted, expressed dissatisfaction of the method, and chose a permanent method after the MTP. On the other hand, a highly significant proportion of the MTP acceptors who had ever used the condom were satisfied with the method; a high percent of those who were not, also opted for sterilisation (Table 4).

Ever users of conventional barrier methods, who were a mere 2.1 per cent, were largely dissatisfied, and did not show any significant difference in their preference of a contraceptive method following MTP (Table 4).

#### ***Reason for Discontinuation of Method Used Last by Ever Users***

Of the 362 MTP acceptors who reported to have ever used a method of contraception, 74 per cent could name the method used last. The condom (61.6 per cent) was most commonly used followed by the IUD (19.4 per

TABLE 4

Distribution of MTP acceptors reporting satisfaction/dissatisfaction of FP method ever used by post-MTP contraceptive choice

Method ever used	Method accepted post-MTP		Total
	Permanent	Temporary	
<i>Oral contraceptive</i>			
Yes, satisfied	20 ( 52.6)	18 ( 47.4)	38 (100.0)
Yes, not satisfied	41 ( 69.5)	18 ( 30.5)	59 (100.0)
<i>IUD</i>			
Yes, satisfied	24 ( 60.0)	16 ( 40.0)	40 (100.0)
Yes, not satisfied	42 ( 61.8)	24 ( 38.2)	68 (100.0)
<i>Condom</i>			
Yes, satisfied	83 ( 46.4)	93 ( 53.6)	179 (100.0)
Yes, not satisfied	51 ( 53.7)	44 ( 46.3)	95 (100.0)
<i>Other</i>			
Yes, satisfied	0 ( 0.0)	3 (100.0)	3 (100.0)
Yes, not satisfied	4 ( 50.0)	4 ( 50.0)	8 (100.0)

cent) and oral pill (18.3 per cent). Half the MTP acceptors had used the last method for less than a year, while 1 - 2 years' use was reported by about 25 per cent of pill users, 29 per cent of condom users, and 17.3 per cent of IUD users, prior to discontinuation.

TABLE 5

Distribution of MTP acceptors by last method ever used and main reason for discontinuation

Main reason for discontinuation	Type of Method Used Last					Total N=272
	Oral Pill N=49	IUD N=53	Condom N=168	Vasectomy N=1	Tubectomy N=1	
Confirmed/ suspected pregnancy	7 (14.3)	4 ( 7.5)	72 (42.9)	0 ( 0.0)	1 (100.0)	84 (30.9)
Complication/side effect	27 (55.1)	32 (60.4)	12 ( 7.1)	0 ( 0.0)	0 ( 0.0)	71 (26.1)
Husband objects	0 ( 0.0)	0 ( 0.0)	23 (13.7)	0 ( 0.0)	0 ( 0.0)	23 ( 8.5)
Fear/concern of side effects/ effectiveness	4 ( 8.2)	3 ( 5.7)	9 ( 5.4)	0 ( 0.0)	0 ( 0.0)	16 ( 5.9)
Want another method	2 ( 4.1)	5 ( 9.4)	4 ( 2.4)	1 (100.0)	0 ( 0.0)	12 ( 4.4)
Want another child	0 ( 0.0)	3 ( 5.7)	6 ( 3.6)	0 ( 0.0)	0 ( 0.0)	9 ( 3.3)
No contraceptive supply	1 ( 2.0)	0 ( 0.0)	3 ( 1.8)	0 ( 0.0)	0 ( 0.0)	4 ( 1.5)
Other	8 (16.3)	6 (11.3)	39 (23.2)	0 ( 0.0)	0 ( 0.0)	53 (19.5)

A fourth of the MTP acceptors who reported to have used a contraceptive method in the past stated that they had stopped contracepting either because they suspected pregnancy (6.3 per cent) or were actually pregnant (24.6 per cent) (Table 5). This was more commonly reported by condom users; one case was of a sterilised woman. Over a quarter (26.1 per cent) of the MTP acceptors had stopped using the method because of side effects/complications, (reported by 55 per cent of pill users and 60 per cent of IUD users), while about 6 per cent had done so out of fear of side effects or lack of effectiveness. Concern about the effectiveness of the method was found to be greater among condom users, while more IUD and pill users were afraid of possible side effects. All the MTP acceptors who stated that they had stopped using the method because of their husband's objection were using the condom. Twelve MTP acceptors reported to have stopped using the method to take another method; one was a case of vasectomy failure. From this analysis, it is evident that only nine (3.3 per cent) couples had a planned pregnancy as they stopped using a contraceptive method because they wanted to have a child. Other reasons included the lack of contraceptive supplies (1.5 per cent), not sexually active (1.1 per cent), menopause (0.4 per cent) and interference with sexual enjoyment (0.7 per cent).

### **Opinion of Best Method, Method in Mind and Method Chosen**

When asked which contraceptive most people considered to be the best, female sterilisation was mentioned by nearly two-fifths (38.9 per cent) of the MTP acceptors, followed by the IUD (20.8 per cent); as many as 30 per cent could not give a specific answer. Although 179 MTP acceptors stated that they were satisfied with the use of the condom, only 70 (6.7 per cent) stated that generally most people considered it as the best method. The oral pill and male sterilisation were among the methods which were not perceived as favourable by most people (Table 6).

Corresponding to the number of MTP acceptors who knew at least one contraceptive method, nearly 80 per cent had a specific method in mind that they wished to use. Except for 5 per cent, all others reported to have chosen the same method that they had in mind following MTP -- about 50 per cent for sterilisation and 29 per cent for the IUD (Table 6).

The majority of the MTP acceptors who opted for a permanent or a spacing method following the MTP, mentioned limitation of family size and birth spacing respectively as the obvious reason for their choice. The next most commonly reported reason was safety and lack of side effects mentioned by a small proportion of the acceptors of permanent methods, and health personnel's advice mentioned by acceptors of spacing methods (Table 7).

TABLE 6

Distribution of MTP acceptors accepting post-MTP contraception by opinion of best method and method in mind prior to current MTP

Type of method	Method accepted post-MTP		Total
	Permanent	Temporary	
<i>Best method</i>	N=647	N=395	N=1042
None	143 (22.1)	81 (20.5)	224 (21.5)
Female sterilisation	358 (55.3)	47 (11.9)	405 (38.9)
IUD	37 (5.7)	180 (45.6)	217 (20.8)
Condom	29 (4.5)	41 (10.4)	70 (6.7)
Oral contraceptive	9 (1.4)	15 (3.8)	24 (2.3)
Other*	71 (10.9)	31 (7.9)	102 (9.8)
<i>Method in mind prior to MTP</i>	N=647	N=393	N=1040
None	127 (19.6)	85 (21.6)	212 (20.4)
MTP + female sterilisation	511 (79.0)	11 (2.8)	522 (50.2)
MTP + IUD	8 (1.2)	294 (74.8)	302 (29.0)
MTP + other	1 (0.2)	3 (0.8)	4 (0.4)
<i>Method chosen same as method in mind</i>	N=526	N=328	N=854
Yes	511 (97.1)	299 (91.2)	810 (94.8)
No	15 (2.9)	29 (8.8)	44 (5.2)

\* "Other" includes "no specific method", and "do not know"

TABLE 7

Distribution of MTP acceptors accepting post-MTP contraception by main reason given for preferring a particular method prior to MTP, and choosing a method post-MTP

Main reason for preferring	Method accepted post-MTP		Total
	Permanent	Temporary	
<i>Method in mind</i>	N=526	N=328	N=854
Permanent/temporary method	448 (85.2)	278 (84.8)	726 (85.0)
Safe/no side effects	21 (4.0)	8 (2.4)	29 (3.4)
Effective method	4 (0.8)	7 (2.1)	11 (1.3)
Easy to use/keep	6 (1.1)	3 (0.9)	9 (1.1)
Doctor/ANM/FPAI field worker says it is best	2 (0.4)	4 (1.2)	6 (0.7)
Easily available	0 (0.0)	3 (0.9)	3 (0.4)
Do not know	12 (2.3)	3 (0.9)	15 (1.8)
Not available	33 (6.3)	22 (6.7)	55 (6.4)
<i>Method chosen</i>	N=647	N=394	N=1041
Permanent/temporary method	580 (89.6)	332 (84.3)	912 (87.6)
Safe/no side effects	21 (3.2)	6 (1.5)	27 (2.6)
Doctor/ANM/FPAI field worker says it is best	6 (0.9)	12 (3.0)	18 (1.7)
Effective method	3 (0.5)	5 (1.3)	8 (0.8)
Easy to use/keep	4 (0.6)	3 (0.8)	7 (0.7)
Easily available	0 (0.0)	2 (0.5)	2 (0.2)
Do not know	11 (1.7)	3 (0.8)	14 (1.3)
Not available	22 (3.4)	31 (7.9)	53 (5.1)



### Quality of Counselling

While FPAI services were well regarded by the majority of the clients, the quality of counselling at the clinic was generally regarded as poor, only 10.4 per cent of the clients reported a good level of counselling (Table 8).

TABLE 8

Distribution of MTP acceptors accepting post-MTP contraception by quality of counselling

Quality	Method accepted post-MTP		Total
	Permanent	Temporary	
Grade	N=647	N=395	N=1042
Very poor (0)	260 (40.2)	100 (25.3)	360 (34.5)
Poor (1)	269 (41.6)	79 (20.0)	348 (33.4)
Fair (2)	111 (17.2)	115 (29.1)	226 (21.7)
Good (3)	7 (1.1)	63 (15.9)	70 (6.7)
Very good (4)	0 (0.0)	29 (7.3)	29 (2.8)
Excellent (5)	0 (0.0)	9 (2.3)	9 (0.9)
Per cent reporting comfortable during counselling	N=488 470 (96.3)	N=284 280 (98.6)	N=772 750 (57.2)
Per cent reporting satisfaction with time spent for discussion	478 (98.0)	276 (97.2)	754 (97.7)

A higher percent of the clients accepting a temporary method (25.6 per cent) perceived the quality of counselling as good as compared to those accepting a permanent method (1.1 per cent) who stated that they did not receive complete counselling at the clinic (Table 8). However, the majority were satisfied with the time spent with them by the doctor or clinic worker for discussion, and also said that they did not feel uncomfortable during the discussion.

### Discussion

In India, the number of women seeking MTP has almost doubled since the time the Act has become operational<sup>8</sup>. This is despite the increased availability of effective methods of contraception. This study documents almost 20 per cent aborters among women seeking FPAI clinic services; the incidence may be higher as non-acceptors of contraceptive methods have been excluded from this study.

Marked variations have been observed in the characteristics of abortion seekers in different countries depending upon the social, legal and moral status of the country<sup>9</sup>. While it was found that most women seeking an abortion in other countries, were unmarried<sup>10</sup>, the vast majority of the MTP acceptors in this study, were married and had at least one living child. This is

corroborated by an analysis of 500 MTP acceptors seeking legal abortion at a family planning centre in Allahabad<sup>11</sup> as well as in a large series in Gujarat<sup>7</sup>. However, teenage aborters were less in this study than reported in the Gujarat study<sup>7</sup>. The findings of this study and that of other investigators<sup>7,9</sup> suggest a positive correlation between post-MTP family planning acceptance and education. In this study, MTP acceptors from different religious groups sought abortion. These groups are almost proportionate to the religious groups of the country,<sup>12</sup> with a few more Muslims and a little less Christians undergoing MTP and choosing a method of contraception.

The trend to have an average of three or more living children before accepting sterilisation still persists and has not changed over the decade<sup>13</sup>. The results of this study also indicate that it is important for a woman to have both living sons as well as daughters before opting for sterilisation. However, the desire to have sons is still prevalent.

The need for abortion as can be deduced from this analysis was that of an unplanned unwanted child for three-fourths of the MTP acceptors with one living child and for over a quarter with two living children. An overwhelming majority of the MTP acceptors with three or more living children did not want additional children. Although 89 MTP acceptors did not want additional children they did not accept a permanent method and are still at risk of another conception. Most of them chose a temporary method mainly because they considered it to be safe or effective.

The results substantiate the observation that a lacunae exists between knowledge and contraceptive use. The three main methods of contraception (condom, female sterilisation and IUD) were known to over 60 per cent of the clients with 84 per cent knowing at least one method. Only half of them had used a method prior to the visit. The source of information about family planning methods was mainly by word of mouth through friends/relatives. The most effective mass media source was the radio, followed by posters and the television.

Women who expressed dissatisfaction with previous contraceptives used by them, were more inclined to opt for sterilisation. The last contraceptive method was used for a year or less by most of the couples. The main reason for having stopped using the last method ever used was of pregnancy, which could have been due to contraceptive failure, as in the case of female sterilisation; or incorrect use, as in the case of the oral contraceptive or condom. Complications/side effects were more commonly reported by oral contraceptive and IUD users. Around six per cent of those MTP acceptors who had stopped using the method did not seem to be well informed to dispel fears about the side effects and effectiveness of the method. It can be seen from this analysis that only a few MTP acceptors had planned their pregnancy and thus discontinued contracepting as they wanted a child.

Fundamental of all the determining factors of family planning acceptance and continuation is perhaps proper counselling. An analysis of this aspect reveals that majority of the MTP acceptors stated that they did not receive information on other methods, effectiveness of the method obtained, the possible side effects and/or complications of the method, instructions on how to use the method and what to do in case of problems. There is a strong need to improve the quality of counselling to increase and reinforce the clients' confidence in using the chosen method. However, overall, the MTP acceptors felt comfortable with the privacy at the clinic and were satisfied with the time spent at the clinic as well as the services. Contraception after MTP is of relevance not only from the point of view of demographics but also considering the health hazards to the woman having frequent pregnancies. Therefore, every attempt must be made by MTP providers to avert an unwanted pregnancy by advocating the proper use of contraceptives.

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# **CONTRACEPTIVE CHOICE, SHIFT AND USE- CONTINUATION : A PROSPECTIVE STUDY IN GUJARAT**

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**and**

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## **INTRODUCTION**

Despite the fact that the Indian family planning programme dates back to the year 1952, it has failed to achieve the set demographic goal in terms of reduction in fertility. Now, with the national objective of reducing the present birth rate of 33 to 23 live births per thousand population by the year 2001, the Government, and particularly the planners and policy makers are facing the grave and crucial question of increasing family planning acceptance among the masses, to the desired extent

Some of the questions haunting planners, policy makers as well as researchers are: Why is the acceptance of various methods of family planning so low? What causes the majority of Indian couples, especially those who desire no more additional children, to shun currently available contraceptives? Why do they accept it so late in their reproductive lives and resort only to terminal methods? Even among the acceptors of spacing methods, why does a substantially large proportion discontinue use?<sup>1</sup>

A plausible explanation for the prevailing low acceptance of family planning can be found in the socio-cultural values and attitudes of the Indian population. An analysis of low acceptance has revealed a commonality among various groups of people. For one, a high value is attached to large families, with at least two sons<sup>2</sup>—the patrilineal and traditional nature of Indian society puts a certain pressure on couples to have sons in order to perpetuate the family name, honour, traditions and customs, as well as to provide old age security. Another factor which promotes large families is the fact that the majority of the Indian population is engaged in agrarian activities. A commonly held belief among this population is that the more hands there are to work the family land, the greater will be the savings which would otherwise be spent on hired labour.<sup>1</sup>

Some of the other barriers that inhibit couples, particularly those who do not want any more children, from practicing contraception are lack of awareness, dislike or misconceptions and fears regarding available methods,

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poor motivation, religious beliefs which proscribe contraception, familial aversion towards family planning, and adverse effects resulting from poor service delivery and follow-up.<sup>1</sup>

It has been observed that the majority of family planning acceptors resort to terminal methods. The reason for this is not very clear. However, while the high incentives offered for sterilisation is one reason for such preference, other factors may also be responsible for increasing acceptor reliance on sterilisation.<sup>2</sup> Further, the perceived and actual side effects of spacing methods, and the lack of sustained motivation and timely follow-up could contribute to a switching over or discontinuation.

A better understanding of these and other related factors in a given cultural context is therefore crucial for increasing the acceptance and continuation of spacing methods. If the country has to achieve its national goal of a Net Reproduction Rate (NRR) equal to one, it must increase the couple protection rate from its present level of 34 per cent to 60 per cent by the turn of this century. This obviously cannot be achieved through sterilisation alone as this is a method that is normally accepted by couples after the wife has attained the age of 30 or more—it is a known fact that not more than 30-35 per cent of the total fertility is contributed by couples where the wife is over 30 years of age. Thus, a more desirable strategy, and one which has already been adopted by the Ministry of Health and Family Welfare, is to (a) increase acceptance of spacing methods and (b) increase its continuation rate by providing sustained educational, motivational and follow-up services. This calls for a greater understanding of why couples choose one or the other method of family planning; how long they continue to use a spacing method; and what are the socio-economic, demographic and cultural programme factors that make some women continue, and others to switch over to another method or stop all method use.

## **OBJECTIVES**

The main objectives of the present paper are: (1) to examine the choice of a particular family planning method, the proportion of switchers, and the reason for their switching over to another method; and (2) to assess the proportion of discontinuers and identify the factors that determine the discontinuation of the method.

## **RESEARCH DESIGN**

Considering the prevalence of use and recognition as scientific methods, it was planned to cover only acceptors of sterilisation, IUD and the oral pill in order to understand the underlying socio-cultural and behavioural factors that determine the use dynamics of these three methods.

The present study is prospective in nature. Those couples who had

accepted any of the two major spacing methods (the oral pill and IUD) during the six months prior to the date of survey were selected and followed up at six monthly intervals for a period of one year. This was done to minimise the recall lapse errors while studying the continuation rates of spacing methods. Couples who had accepted sterilisation during the six months prior to the date of survey, however, were interviewed only once. Under this procedure of follow-up, a woman's exposure to a spacing method ranged between a minimum of 2 months to a maximum of 18 months at the end of the final follow-up visit. An exposure of 12 months to a spacing method such as the IUD or the oral pill is sufficient for a follow-up study as the discontinuation rates of these methods are expected to be high especially during the first 3 months when the motivation to use these methods is invariably low due to side effects like breakthrough bleeding and pain. After this initial period these rates stabilise within an exposure of 12 months.

A sample of around 1000 acceptors each of sterilisation and IUD was studied. Since the oral pill is not yet very popular in India, particularly in rural India, it was decided that a sample of only 600 cases from urban areas be covered. In order to take care of cases lost to follow-up, a 20 per cent extra sample of acceptors of each of the three methods was included. Thus, the total sample, selected by using a multistage stratified sampling design, consisted of 1200 sterilisation, 1200 IUD and 720 oral pill acceptors.

The study was located in the state of Gujarat. Data were collected from rural and urban areas of three selected districts of the state through individual interviews using an interview schedule which included both structured and unstructured questions. The first two rounds of data collection for the study had just been completed at the time of writing this paper, and therefore, the method continuation analysis presented here is restricted upto the second follow-up date. It was possible to cover 1170 cases of sterilisation and 1123 cases of IUD from the sample of 1200 cases of each of these methods. Further, it was not feasible to cover more than 494 of the total 720 oral pill users

## **RESULTS AND DISCUSSION**

### **A. Contraceptive Method Choice and Shifting**

Until recently, little research had been done on the determinants of choice of different contraceptive methods. The dominant concern of policy makers all along was to influence couples to use any method of family planning. But rapid increases in contraceptive prevalence and accumulated experience with each method have heightened the awareness that method choice is an important research question.<sup>1</sup>

Recent years have witnessed a substantially increased sophistication in the area of appraising contraceptive method mixes. It is now well known

that a good contraceptive method mix is characteristic of almost any successful family planning programme. In fact, one of the main reasons for not achieving its set demographic goal in terms of fertility reduction is that the Indian family planning programme has remained essentially a sterilisation programme. Realising this, of late the Government of India has been placing equal emphasis on spacing methods. In this context, knowing what affects the choice of a method by the potential clientele would be very valuable in guiding both motivational and service provision aspects of a programme. The present section deals with the simultaneous analysis of the choice and switch over of one method to the other. It then describes the reasons for discontinuation of the previous method before switching over to the recorded method.

For the present analysis, switching over of a contraceptive was defined as occurring when the cohort of couples using a specific recorded method had used one or more other methods of family planning prior to the use of the recorded method (method under follow-up). If the specified recorded method was other than a terminal method, it could also be possible that the recorded method of use might have been replaced by another method during the follow-up period of the study. Since the final follow-up of these acceptors is still in progress, the present analysis, at this stage, will not delve into such change-overs that may have taken place during the follow-up period.

The history of each of three different cohorts of users of sterilisation, IUD and the oral pill was traced back for use of another method(s) of family planning prior to the use of the recorded method. Sequential changes among method types used prior to the adoption of sterilisation, IUD and the oral pill reflected 10, 7 and 7 different patterns of use respectively. (Table 1).

### *The Sterilisation Cohort*

Among the cohort which ultimately went for a terminal method, 71 per cent had not used any other method of family planning prior to undergoing sterilisation. A single change in method type before opting for sterilisation was reported by 24 per cent of the couples; with about half having used the IUD; a fourth, natural methods; one-sixth having used condoms; and the rest the oral pill. Further, a small number of couples (5.2 per cent) had changed the method twice before shifting to sterilisation. Among those who changed methods twice, almost three-fourths had used the IUD as one method and the pill, condom or a natural method as the other method before switching over to sterilisation. The above analysis clearly delineates that in the case of the sterilisation cohort, the switching of methods by and large had taken place from the IUD to sterilisation, or a combination of the IUD with other methods to sterilisation, followed by a shift from other natural methods or their combination with other modern methods, to sterilisation, in that order.



TABLE 1

Percentage distribution of acceptors of sterilisation, IUD and oral pills by use of another method(s) prior to adoption of current method

Choice/use of another method	Prior to adoption of		
	Sterilisation	IUD	Oral Pill
None	70.7 (834)	79.8 (896)	48.0 (237)
<i>One method</i>			
IUD	12.5 (147)		31.2 (154)
Oral Pill	2.1 (25)	7.2 (81)	
Condom	3.6 (42)	7.1 (80)	8.3 (41)
Terminal method		0.1 (1)	0.2 (1)
Other methods*	5.9 (69)	4.0 (45)	6.9 (34)
<i>Two methods</i>			
IUD/Oral Pill	1.8 (21)		
IUD/Condom	1.0 (12)		2.6 (13)
IUD/Other*	1.0 (12)		1.8 (9)
Oral Pill/Condom	0.4 (5)	1.1 (12)	
Oral Pill/Other*	0.3 (4)	0.3 (3)	
Condom/Other*	0.7 (8)	0.4 (5)	1.0 (5)
Total	100.0 (1179)	100.0 (1123)	100.0 (494)

Figures in brackets denote the number of acceptors.

\* Other methods include natural methods and any other method which is otherwise not included elsewhere in the table.

### *The IUD Cohort*

In the case of the IUD cohort, 80 per cent of the couples had preferred to use the IUD straightaway without having had any experience of use of another family planning method, while 18 of the remaining 20 per cent couples had used only one other contraceptive method before shifting to the IUD (Table 1). Among couples who had experienced a single change in method type, about 39 per cent each had shifted from the pill or the condom, and about 22 per cent from natural methods, to the IUD. Interestingly, there was one couple who was using sterilisation as a method of family planning but this couple had to resort to the IUD due to a failure of the terminal method.

Of the 20 couples who had changed a method twice, 12 couples had used the pill and condom; 3 had used the pill and other natural methods, while 5 had used the condom and other natural methods prior to accepting the IUD. Thus, there appears to be a major shift in the use of methods from 'oral pill to IUD' or 'condom to IUD' followed by other 'natural methods to IUD' under this cohort.

*The Oral Pill Cohort*

As shown in Table 1, less than half (48 per cent) of the couples under this cohort restricted themselves to the use of the oral pill as the only method of family planning, while another 47 per cent had changed once before using the pill. A major single shift was reported from 'IUD to oral pill' by 31 per cent of the respondents, followed by 'condom to oral pill' by 7 per cent. Even among cases who reported a two-method change, the major shift was from 'IUD to pill' followed by 'condom to pill' or 'other natural method to pill'.

**Reasons for discontinuation of previous method before switching methods***Reasons for discontinuation of previous method before switching over to sterilisation*

As indicated earlier, 29 per cent of the couples had experience of the use of one or more methods before switching over to sterilisation. The reasons for the discontinuation of the previous method and shifting to sterilisation were explored and are presented in the Table 2. Fertility intentions as determined by the desire to have a child were found to be the predominant factor in the discontinuation of a previous method as reported by 39 per cent of the couples. Discomfort in the use of the method/side effects/physical complaints was another major reason, stated by 35 per cent of the couples, while another 30 per cent wanted to shift to a permanent method and hence discontinued the previous spacing method. Failure of the earlier method (IUD, condom, other natural methods) was reported by just one per cent of the users as a reason for accepting sterilisation. Psychic factors, like fear of side effects/fear of failure/fear of pill lapse, were responsible for about three per cent of the couples' switching over to sterilisation, while yet another three per cent considered sterilisation as a safer method to avoid unwanted pregnancies and therefore adopted it.

*Reasons for discontinuation of previous method before switching over to the IUD*

Like the sterilisation cohort, here again the major reason for discontinuation of the previous method(s), before initiating IUD use was the desire for an additional child (Table 3). 'Discomfort in the use of method/side effects/physical complaints' were reported by 35 per cent of the switchers as the reason for the discontinuation of the previous method. Another 19 per cent said they had chosen the IUD in their search for a safer method to space or restrict unwanted pregnancies. Fear of side effects/fear of failure/fear of lapse of pill was the next important factor (10 per cent of the switchers) leading

**TABLE 2**  
**Reasons for discontinuation of previous method(s) before shifting to sterilisation**

Reason for discontinuing the previous method(s)	Method discontinued prior to use of sterilisation (% distribution)									
	IUD	Oral Pill	Condom	Other Methods	IUD/ Pill	IUD/ Condom	IUD/ Other	Pill/ Condom	Pill/ Other	Total
1. Wanted a child	31 (21.1)	7 (28.0)	24 (57.1)	41 (59.4)	5 (23.8)	6 (50.0)	7 (58.3)	3 (60.0)	8 (100.0)	135 (39.1)
2. Discomfort in the use of method/side effects/physical complaints	56 (38.1)	8 (32.0)	7 (16.7)	-	24 (114.3)	8 (66.7)	6 (50.0)	2 (40.0)	4 (50.0)	122 (35.4)
3. Fear of side effects/failure/lapse	-	2 (8.0)	2 (4.8)	1 (1.4)	-	1 (8.3)	-	2 (40.0)	1 (12.5)	9 (2.6)
4. Medical advice/wanted to go for a safer method	5 (3.4)	-	-	1 (1.4)	2 (9.5)	1 (8.3)	1 (8.3)	1 (20.0)	-	11 (3.2)
5. Failure of the method	1 (0.7)	-	1 (2.4)	3 (4.4)	-	-	-	-	-	5 (1.4)
6. Wanted to take a permanent method	50 (34.0)	7 (28.0)	7 (16.7)	10 (14.5)	11 (52.4)	7 (58.3)	8 (66.7)	2 (40.0)	1 (12.5)	105 (30.4)
7. Pill lapse/IUD expelled/IUD displaced	4 (2.7)	1 (4.0)	-	-	-	-	1 (8.3)	-	-	1 (0.3)
8. Reason not specified	-	-	1 (2.4)	13 (18.8)	-	1 (8.3)	1 (5.5)	-	2 (25.0)	19 (5.5)
<b>Total</b>	<b>147</b>	<b>25</b>	<b>42</b>	<b>69</b>	<b>21</b>	<b>12</b>	<b>12</b>	<b>5</b>	<b>8</b>	<b>345</b>

Note: In the case of the use of two methods prior to sterilisation, the percentage will add up to 200 because two reasons were mentioned for the discontinuation of the two methods. The percentages for the total will also add up to more than 100 because of the above reason.

to discontinuation of the previous method in favour of IUD. Failure of the previous method was also an important reason as 4 per cent of the couples reported it as a reason for changing over to the IUD.

TABLE 3

Reasons for discontinuation of previous method(s) before shifting to the IUD

Reason for discontinuing the previous method	Method discontinued prior to use of IUD (% distribution)							Total
	Oral Pill	Condom	Sterilisation	Other	Pill/ Condom	Pill/ Other	Condom/ Other	
1 Wanted a child	16 (19.8)	25 (31.3)	—	35 (77.8)	6 (50.0)	1 (33.3)	5 (100.0)	88 (38.8)
2 Discomfort in the use of method/side effects/physical complaints	49 (60.5)	12 (15.0)	—	—	9 (75.0)	2 (66.6)	3 (60.0)	74 (32.6)
3 Fear of side effects/failure/lapse	5 (6.2)	13 (16.3)	—	—	4 (10.1)	1 (33.3)	—	23 (33.3)
4 Medical advice/wanted to take a safer method	5 (6.2)	22 (27.5)	—	7 (15.6)	4 (33.3)	2 (66.6)	2 (40.0)	42 (18.5)
5 Failure of the method	3 (3.7)	4 (5.0)	1 (100.0)	—	—	—	—	8 (3.5)
6 Wanted to take a permanent method	—	2 (2.5)	—	1 (2.2)	—	—	—	2 (0.9)
7 Pill lapse	3 (3.7)	—	—	—	1 (8.3)	—	—	4 (1.8)
8 Reason not specified	—	2 (2.5)	—	2 (4.4)	—	—	—	4 (1.8)
Total	81	80	1	45	12	3	5	227

Note In the case of the use of two methods prior to sterilisation, the percentage will add up to 200 because two reasons were mentioned for the discontinuation of the two methods. The percentages for the total will also add up to more than 100 because of the above reason.

#### *Reasons for discontinuation of previous method before switching over to the oral pill*

Unlike the sterilisation and IUD cohorts, the prime reason which motivated 60 per cent of the switchers to change methods in favour of the oral pill, was the 'discomfort in the use/side effects/physical complaints' (Table 4). The next reason, in order of importance was the need for a safer method (22 per cent). Fertility intention as a reason for discontinuation of the previous method was given by 14 per cent of the switchers. Failure of the method, psychic factors like fears relating to side effects, failure, or displacement

TABLE 4

Reasons for discontinuation of previous method(s) before shifting to the oral pill

Reason for discontinuing the previous method	Method discontinued prior to use of the oral pill (% distribution)							Total
	IUD	Condom	Sterilisation	Other	IUD/ Condom	IUD/ Other	Condom/ Other	
1. Wanted a child	9 ( 5.8)	7 (17.1)	—	7 (20.6)	7 (53.8)	4 (44.4)	2 (40.0)	36 (14.0)
2. Discomfort in the use of method/side effects/physical complaints	111 (72.1)	20 (48.8)	—	1 ( 2.9)	10 (76.9)	9 (100.0)	3 (60.0)	154 (59.9)
3. Fear of side effects/failure/lapse	2 ( 1.3)	3 ( 7.3)	—	3 ( 8.8)	2 (15.4)	—	—	10 ( 3.9)
4. Medical advice/wanted to take a safer method	23 (14.9)	7 (17.1)	—	14 (41.2)	4 (30.8)	4 (44.4)	4 (80.0)	56 (21.8)
5. Failure of the method	1 ( 0.7)	3 ( 7.3)	1 (100.0)	5 (14.7)	1 ( 7.7)	1 (11.1)	1 (20.0)	13 ( 5.1)
6. Wanted to take a permanent method	—	1 ( 2.4)	—	—	—	—	—	1 ( 0.4)
7. IUD expelled/displaced	7 ( 4.5)	—	—	—	1 ( 7.7)	—	—	8 ( 3.1)
8. Reason not specified	1 ( 0.7)	—	—	4 (11.8)	1 ( 7.7)	—	—	6 ( 2.3)
Total	154	41	1	34	13	9	5	257

Note: In the case of the use of two methods prior to sterilisation, the percentage will add up to 200 because two reasons were mentioned for the discontinuation of the two methods. The percentages for the total will also add up to more than 100 because of the above reason

or expulsion of the IUD were other reasons for discontinuation and acceptance of the pill. The foregoing discussion suggests that though the desire to complete family size was one of the prime factors for discontinuation of the previous method(s) among all the three groups, 'Discomfort/side effects/physical complaints' and/or 'safety of the method' were the cause of concern which prompted the majority of the couples to switch over to the oral pill, IUD or sterilisation.

### **Contraceptive discontinuation risks and their covariates**

This section seeks to examine the discontinuation experiences of currently contracepting women who had accepted the IUD six months prior to the initiation of the study<sup>1</sup>. The analysis concerns data from the first round of data collection, that is, upto the second follow-up done six months later between April to July 1989, and is therefore limited to a maximum of the first 12 months of exposed use (to the risk of unintended pregnancy). This analysis then is subject to change when the current data are up-dated following the analysis of the final follow up information. In the first place, life table analysis was done to obtain duration specific discontinuation rates, and finally, a hazards-model approach was used to examine the independent effects of women's characteristics on the risk of discontinuation of a method.

#### *Continuation Rate of IUD*

Continuation rates\* among the IUD acceptors were analysed using single and multiple decrement life tables. The results as presented in Table 5 indicate that the total termination rate was about 22 per cent at the end of 3 months, 33 per cent at the end of 6 months, 43 per cent at the end of 9 months and 51 per cent at the end of 12 months. In other words, 78 per cent, 67 per cent, 57 per cent and 49 per cent were continuing with the IUD at the end of 3, 6, 9 and 12 months respectively. Thus, the dropout rates were relatively higher in the earlier than in the later months of use.

When the total termination rate was decomposed into various possible decrements, viz. removal, expulsion, and pregnancy using multiple decrement life tables, the net termination rate due to removal was observed to be about 19 per cent at the end of 3 months, 29 per cent at the end of 6 months, 39 per cent at the end of 9 months, and 46 per cent at the end of 12 months (Table 5). As expected, the corresponding gross termination rates were slightly higher or equal to the net rates. The expulsion rates were much lower than the removal rates—about 2.2, 3.0, 3.8, and 4.3 per cent at the end of 3, 6, 9 and 12 months respectively. Here again, the gross expulsion rates were slightly higher than the net rates. The gross accidental pregnancy rate was 0.88 per cent at the end of 12 months while the corresponding net rate was 0.56 per cent. A recent study<sup>4</sup> has reported the lowest expected failure rate during the first year of use of the IUD (CuT) among perfect users as 0.8 per cent, while literature on contraceptive failure reports this rate for the CuT as 0.5 per cent. The failure rate reported in the present sample thus seems to match that of other studies on this aspect.

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\* A similar analysis of users of the oral pill could not be presented as it was in progress at the time of preparation of this paper.

TABLE 5

Life table for IUD Acceptors: Gross and Net Removal, Expulsion and Pregnancy Rates

Ordinal month x	Gross and Net Rates for						Total (CTR <sub>x</sub> )
	Removal		Expulsion		Pregnancy		
	GCTR <sub>x</sub>	NCTR <sub>x</sub>	GCTR <sub>x</sub>	NCTR <sub>x</sub>	GCTR <sub>x</sub>	NCTR <sub>x</sub>	
1	.0480	.0478	.0058	.0057	.0000	.0000	.0535
2	.1124	.1116	.0157	.0148	.0000	.0000	.1264
3	.1624	.1606	.0237	.0216	.0013	.0011	.1834
4	.1952	.1925	.0237	.0216	.0028	.0023	.2164
5	.2245	.2210	.0280	.0254	.0028	.0023	.2483
6	.2609	.2563	.0310	.0273	.0028	.0023	.2859
7	.2999	.2938	.0342	.0296	.0028	.0023	.3257
8	.3272	.3201	.0375	.0319	.0028	.0023	.3543
9	.3624	.3538	.0429	.0354	.0028	.0023	.3914
10	.3953	.3850	.0469	.0379	.0049	.0035	.4265
11	.4166	.4052	.0518	.0408	.0049	.0035	.4495
12	.4401	.4273	.0548	.0425	.0049	.0035	.4733
13	.4767	.4618	.0548	.0425	.0088	.0056	.5098

GCTR = Gross Cumulative Termination Rate, NCTR = Net Cumulative Termination Rate, and CTR = Cumulative Termination Rate

### *Factors influencing discontinuation of IUD use*

The socio-economic and demographic characteristics of the IUD acceptors, their fertility intentions, perceived and actual medical risks of the method (including failure), socio-cultural values and other factors associated with contraception and service dynamics (including distance to the nearest health facility, physical facilities and supply based on demand, and nature of follow-up services) were the main independent variables considered in this model. Duration of use by status of termination at the cut-off point was taken as a dependent variable to study the risk of discontinuation of contraception.

Considering the type of analysis undertaken, the Proportional Hazard Model (PH Model) proposed by Cox<sup>5</sup> was used. The model incorporates explanatory or regression variables which are specified in terms of the hazard function. The hazard function for an individual is a function of time 't' and that of the individual's explanatory variables. The PH Model assumes the explanatory or regression variables  $x_1, x_2, \dots, x_k$  affect the hazard function in a multivariate way specified by  $h(t; x_1, x_2, \dots, x_k) = h_0(t) e^{B_1 x_1 + \dots + B_k x_k}$  where  $h_0(t)$  is an unspecified non-negative function of time 't' called the baseline hazard -- which represents the hazard function for an individual whose explanatory variables are all zero. The maximum likelihood method was used for estimating coefficients. Following examination of the data on the 1123 IUD acceptors, the following explanatory variables were finally selected to study their effects on the hazard function:

**1. Socio-economic and demographic characteristics**

- \* Number of living children at the time of acceptance of IUD
- \* Caste
- \* Wife's educational attainment
- \* Annual family income
- \* Tolerance level

**2. Fertility intention**

- \* Ideal family size
- \* Ideal spacing between births

**3. Perceived and actual medical risks**

- \* Perceived or actual side effects associated with the method in use
- \* Perceived effectiveness of the method
- \* Convenience of the method

**4. Service dynamics**

- \* Frequency of visits by the health worker
- \* Distance of Primary Health Centre (PHC)/Urban Centre (UC) from residence
- \* Availability of contraception PHC/UC

**5. Socio-Cultural Values and Beliefs**

- \* Type of family—negative familial attitudes (roles and values of children, especially sons, and the influence of in-laws is likely to be reflected by comparing couples in nuclear and joint families.
- \* Social taboos relating to menstruation—some IUD users experience—excessive bleeding, irregular menstruation or other menstrual problems which may affect their performance of household activities such as cooking, serving food, doing puja/performing other religious activities, and conjugal relations especially in rural traditional families. If such taboos prevail, the couple may discontinue the use of the method.

The variables tested for inclusion in the statistical model and the value assigned to each during model fitting are shown in Table 6, while the results of the Hazard Model analysis of the covariates of IUD discontinuation are presented in Table 7. The first column of the latter table shows the regression coefficients for each selected variable. As can be seen from Table 6, among the socio-economic and demographic variables analysed, the wife's educational level proved to be a significant covariate for IUD discontinuation. Highly educated women showed a lower probability of discontinuation.



TABLE 6

Description of variables tested for inclusion in the statistical model

Variable	Value finally assigned to each category of a variable during model fitting			
<i>Socio-economic and demographic characteristics</i>				
Number of living Children	<u>1 or less</u> 1	2 2	<u>3 or more</u> 3	
Caste	<u>Low caste</u> 1	<u>Other castes</u> 2	<u>Higher caste</u> 3	
Wife's education	<u>Illiterate</u> 1	<u>Primary</u> 2	<u>Secondary &amp; Higher</u> 3	
Annual income (in rupees)	<u>&lt; 6000</u> 1	<u>6000-12000</u> 2	<u>12000-24,000</u> 3	<u>&gt;24,000</u> 4
Tolerance level	<u>High</u> 0		<u>Low</u> 1	
<i>Fertility intention</i>				
Ideal family size	<u>1-2</u> 1	<u>3</u> 2	<u>4 &amp; more</u> 3	
Ideal spacing between births (in years)	<u>1-2</u> 1	<u>3</u> 2	<u>4 &amp; more</u> 3	
<i>Perceived and actual medical risks</i>				
Perceived or actual side effects of the method	<u>Known</u> 1		<u>Not known</u> 0	
Perceived effectiveness of the method	<u>Others</u> 0		<u>Safe</u> 1	
Convenience of the method	<u>Others</u> 0		<u>Most convenient</u> 1	
<i>Service dynamics</i>				
Frequency of visits by health staff	<u>Every week</u> 1	<u>Every fortnight</u> 2	<u>Every month</u> 3	<u>Occasionally</u> 4
Distance to PHC/UC from residence	<u>1 km</u> 1	<u>1-5 km</u> 2	<u>6-10 km</u> 3	<u>11 km</u> 4
Availability of contraception from PHC/UC	<u>Always</u> 0	<u>Sometimes or never</u> 1		
<i>Socio-cultural values and beliefs</i>				
Type of family	<u>Nuclear</u> 0	<u>Joint</u> 1		
Social taboos about menstruation affecting household activities	<u>Not affected</u> 0	<u>Affected</u> 1		

The fertility intention of the couples as judged by ideal family size and ideal spacing between births, was not significant. In the case of perceived and actual medical risk variables, all the variables namely, perceived or actual side effects, perceived effectiveness, and convenience of use of the method were significant, while among the three service variables, contraceptive availability through government clinics and regular visits by the health worker were significantly related to IUD discontinuation. Finally, among the factors related to socio-cultural values and beliefs, social taboos relating to menstruation appeared to negatively affect IUD use.

The Hazard model analysis presented in Table 7 provides the hazard ratio (in the last column) for each variable. In other words, this value indicates the hazards of discontinuing IUD use by a factor. For example, when the couple had knowledge of the side effects or had experienced any side effect, the hazard function of the couple was almost twice that of a couple who had no knowledge or experience of any side effects (Hazard ratio  $e^B = 1.796$ ), other things being equal. Similarly when the effect of social taboos relating to menstruation were examined, it was found that couples whose household activities were likely to be affected as a result of menstrual problems, were at almost three times the risk of dropping out than those couples who did not believe in such social taboos; the value of the hazard ratio ( $e^B$ ) being 2.793. Other variables such as convenience of use, perceived effectiveness, and free supply of contraceptives which were also used as dummy variables in the model can be interpreted similarly using the hazard ratio. When the effect of wife's education on the hazard function was examined, it was observed that women who had received primary education were about 22 per cent less likely to drop out than were illiterate women, the value of  $e^B$  being .7756 against the variable of wife's education which had three categories—illiterate, primary, and secondary and higher education. The hazard ratio of this variable further illustrates that secondary and higher educated women were much less likely (.39 times) to drop out than were illiterate women ( $e^B = .61$ ), indicating that education can alter the risk of method abandonment through its effect on the women's control on her life.

Considering the various significant covariates of use continuation of the method, it appears that the covariates most subject to intervention are improvement in women's education and strengthening of service delivery, particularly in the areas of follow-up services, supply of contraceptives based on demand, and removal of fears and actual side effects associated with contraception. The impact of side effects relating to menstruation on the hazard rate gets aggravated in the presence of social taboos relating to menstruation. Perceived effectiveness of the method and convenience of use are also important factors, although the reasons for discontinuing IUD are probably related to a greater extent to experience or fear of potential health hazards

TABLE 7

**Analysis of factors affecting discontinuation of contraceptive (IUD) using Cox Proportional Hazard Model**

Variable	Proportional Hazard Regression Results	
	Coefficient	Hazard Ratio
Number of living children	.00830	1.008
Caste	-.04732	.9538
Wife's education	-.25420*	.7756
Annual income	-.06165	.9402
Tolerance level	.04154	1.042
Ideal family size	-.11320	.8930
Ideal spacing between births	-.20690	.8131
Visit of health worker	.1565*	1.169
Distance to PHC/UC from residence	.07790	1.081
Availability of contraception	.4295*	1.539
Perceived or actual side effects of the method	.58570*	1.796
Perceived effectiveness of the method	-.5369*	.5845
Convenience of the method	-.51200*	.5993
Type of family	.00516	1.005
Social taboos about menstruation affecting household activities	1.027***	2.793

Deviance = 2655.318

Likelihood Ratio Statistics on 15 DF = 122.147, P .001

Total Number of Observations = 1123

\* Significant at .05 level

\*\* Significant at .01 level

\*\*\* Significant at .001 level

than to effectiveness or convenience.

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# **A STUDY OF MTP ACCEPTORS AND THEIR SUBSEQUENT CONTRACEPTIVE USE+**

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## **INTRODUCTION**

In India, since 1972 when the Medical Termination of Pregnancy (MTP) Act legalising abortion was introduced, abortions have steadily increased. According to available statistics, the number of approved institutions providing MTP services has increased from 1877 in 1976 to 6126 in 1988. Similarly, the number of MTP cases, have risen from a mere 25 in the year 1972-73 to 583,857 in 1987-88. However, these figures reflect only the tip of the iceberg. It is estimated that in India, every year, about 5 to 6 million abortions are conducted by private practitioners, the majority of whom are based in rural areas, have no training, and hence perform most of the abortions in unhygienic conditions and by unscientific ways'. All such abortions conducted in unrecognised clinics are considered illegal, and are a major determinant of the continued high level of maternal morbidity and mortality in India. It is believed that the major causes of continued illegal abortion are a lack of adequate services particularly in rural areas<sup>1</sup>, insufficient information about available MTP services<sup>3,4</sup>, lack of credibility of the public clinics<sup>4,5</sup>, and social reasons of maintaining confidentiality in view of the taboo against abortion. As these abortions are carried out illegally, it is difficult to identify and study them through scientifically designed sample surveys. Even abortions which are carried out in recognised clinics (mostly public), have hardly been studied because of the sensitivity of the subject. There are very few studies which provide precise information on the profile of MTP acceptors, the circumstances under which abortion is generally sought, and the subsequent reproductive behaviour of women who accept MTP. The present paper is an attempt in this direction.

## **DATA**

This paper is based on the data collected for a major study on choice

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+ The views expressed in this paper are those of the authors and not necessarily shared by ORG or the Ford Foundation.

of contraceptives conducted by the Operations Research Group, Baroda, with financial assistance from the Ford Foundation, New Delhi. The study was carried out in three urban centres, namely, Patna in Bihar, Bhubaneswar in Orissa and Baroda in Gujarat. At each centre, four public hospitals offering family planning and MTP services, were included in the study.

The study design proposed that at each location, the first 300 women registering for MTP from the date of initiation of the Project, would be selected. However, at each centre, a slightly larger number of women i.e. 347 MTP cases in Patna, 457 cases in Bhubaneswar and 416 cases in Baroda, were registered mainly to ensure that even after loss to follow-up, there would be about 900 follow-up interviews. All the women were first interviewed at the clinics before consulting the doctor. Subsequently, they were followed up at their residence, three months later. In the follow-up interview, details about their family planning status etc. were obtained.

Of the 1220 women who were interviewed, only 982 (80.5 per cent) could be contacted for follow-up. Out of these, 931 (94.8) had undergone MTP while 23 (2.3 per cent) had delivered a child. The rest either refused to be interviewed (N=8, 0.8 per cent) or reported a spontaneous abortion (N=20, 2.0 per cent). The present paper is based largely on the pre-consultation interviews conducted at the study clinics and some observations made during the follow-up survey. The 23 women who had changed their decision to accept MTP, were dropped from the analysis.

## RESULTS AND DISCUSSION

### Socio-economic Profile of the MTP Acceptors

An analysis of the socio-economic profile of the MTP acceptors shows that most of them (95 per cent) were Hindu and the majority (65 per cent) belonged to high caste groups (Table 1). A comparison among the states, however, showed considerable variation in caste composition. For example, while backward castes constituted about half of the acceptors in Patna, they only formed one-fourth of those in Baroda, whereas there were almost none in Bhubaneswar. Similarly, the percentage of high caste women ranged between 41 per cent in Patna to 87 per cent in Bhubaneswar.

An analysis by educational level indicated that the majority (79 per cent) of the MTP acceptors had received formal schooling, with about 45 per cent having had 9 or more years of schooling (Table 1). This suggests that acceptance of MTP was relatively higher among educated women, and is supported by the fact that the proportion of illiterate MTP acceptors was much lower (21 per cent) than their proportion among the general population\*. Between the three study locations, relatively more illiterate women in Patna (30 per cent) had accepted MTP than in Baroda (20 per cent) or Bhubaneswar (15

**TABLE 1**  
**Socio-economic profile of MTP acceptors (percentage)**

	Patna	Bhubaneswar	Baroda	Total
<i>Religion/Caste</i>				
Hindu	93.9	97.6	91.8	94.6
Scheduled Caste	3.2	7.7	2.4	4.6
Scheduled Tribe	0.5	2.2	1.2	1.4
Backward Caste	49.0	0.2	26.7	23.1
High Caste	41.2	87.5	61.5	65.5
Muslims	4.9	1.8	7.2	4.5
Other groups	1.2	0.6	1.0	0.9
<i>Education</i>				
Illiterate	29.7	14.7	20.0	20.7
Upto 5 years	8.1	16.8	10.8	12.3
6-8 years	19.0	23.9	21.4	21.6
9-12 years	19.3	15.8	38.0	24.4
13-15 years	23.9	28.8	9.8	21.0
Mean	4.07	8.06	6.90	7.38
SD $\pm$	5.90	5.60	4.63	5.40
<i>Working status of the woman</i>				
Housewife	88.2	93.2	89.2	90.4
Working	11.5	6.8	10.6	9.4
Student	0.3	—	0.2	0.2
<i>Family income</i>				
Rs.550 or less	9.8	5.5	38.1	17.7
Rs.551-1000	33.2	29.1	42.0	34.6
Rs.1001-2000	35.0	46.2	15.7	32.7
Rs.2001 +	22.0	19.2	4.2	15.0
Mean	1374.9	1416.2	761.4	1184.2
SD $\pm$	786.4	710.0	559.3	750.1
Total (N)	347	457	393	1197

per cent). In all the three locations most of the women (88 to 93 per cent) seeking MTP were housewives; only 7-10 per cent were working women.

The average monthly family income of the MTP acceptors was Rs.1184. About 18 per cent were from families which were below the poverty line (monthly income of Rs.550 or less), one-third each belonged to the Rs.551-1000 and Rs.1001-2000 income groups, and 15 per cent reported a monthly family income was Rs. 2001 or more. An inter-state comparison revealed that the MTP acceptors from Baroda were much poorer (average income Rs.761) than their counterparts in Patna (average income Rs.1375)

and Bhubaneswar (average income Rs.1416). In Baroda, as many as 38 per cent of the women reported a monthly income of Rs.550 or less as compared to only 10 per cent in Patna and 6 per cent in Bhubaneswar. Compared to Patna and Bhubaneswar, Baroda city is much more developed, and being an industrial city, the average family income in Baroda is significantly higher than that of the other two cities. Hence it is reasonable to conclude that the MTP services available at public clinics and hospitals in Baroda are sought mainly by very poor families who cannot afford a private clinic.

### Demographic Profile

#### Age

In general, the women seeking MTP services were young and the majority (65 per cent) were below 30 years; the mean age was 27.9 year (Table 2). A comparison across the states did not show any major difference except that, over all, in Patna, the women were slightly older (mean age : 28.7 years) than in Bhubaneswar (mean age : 28.0 years) and Baroda (mean age : 27.1 years).

TABLE 2  
Percentage distribution of MTP acceptors by age

Age (years)	Patna	Bhubaneswar	Baroda	Total
14-19	2.6	1.3	1.4	1.7
20-24	19.6	25.4	26.9	24.3
25-29	33.7	38.9	45.4	39.7
30-34	31.4	21.7	20.7	24.1
35+	12.7	12.7	5.6	10.2
Total	100.0	100.0	100.0	100.0
Mean age	28.7	28.0	27.1	27.9
SD $\pm$ ;	5.2	5.1	4.4	5.0
Total (N)	347	457	416	1220

#### Reproductive Performance

Table 3 presents the pregnancy experience of the women, the total live births, living children and living sons at the time of registration for MTP. As can be seen from the table, the mean of the total pregnancies experienced by the women was 4.4 in Patna, 3.7 in Bhubaneswar and 3.6 in Baroda; the

\* According to the 1981 Census, the percentage of illiterate women in these urban locations was 56 in Patna, 47 in Bhubaneswar and 39 in Baroda.



overall mean being 3.8. This shows that the majority (83 per cent) of the women sought an abortion for the third or higher order of pregnancy. Further analysis shows that 16 per cent of the women wanted to terminate a second order pregnancy; 28 per cent, the third, while the remaining 55 per cent sought an abortion for the fourth or higher order of pregnancy. Statewise, women seeking MTP with higher order (4 or more) pregnancies were highest

TABLE 3

Percentage distribution of MTP acceptors by pregnancy order, total live births, living children and number of sons

	Patna	Bhubaneswar	Baroda	Total
<i>Pregnancy order</i>				
1st	0.3	1.1	1.9	1.1
2	13.3	17.1	17.8	16.2
3	19.3	29.1	32.9	27.8
4	19.9	26.0	26.7	24.5
5	20.4	14.0	13.2	15.5
6+	26.8	12.7	7.5	14.9
Mean	4.4	3.7	3.6	3.8
SD $\pm$	1.6	1.4	1.3	1.5
Percentage repeating abortion	11.0	21.7	13.7	15.9
<i>Total live births</i>				
0	0.3	1.3	2.2	1.7
1	13.5	19.7	20.0	19.8
2	25.4	40.9	44.0	38.6
3	21.3	24.3	22.8	22.8
4+	39.5	13.8	11.0	17.1
Mean	3.1	2.4	2.3	2.5
SD $\pm$	1.5	1.1	1.1	1.3
<i>Total living children</i>				
0	0.3	1.1	1.9	1.1
1	14.1	19.9	20.7	18.5
2	28.2	43.2	48.8	40.8
3	23.6	22.8	20.0	22.0
4+	33.8	13.0	8.6	17.6
Mean	3.0	2.3	2.1	2.4
SD $\pm$	1.4	1.1	1.0	1.2
Mean number of children who died	0.21	0.05	0.15	0.13
<i>Total living sons</i>				
0	15.0	17.1	22.6	18.3
1	32.9	48.1	54.8	46.1
2+	52.1	34.8	22.6	35.6
Mean	1.6	1.3	1.1	1.3
SD $\pm$	1.1	0.9	0.7	0.9
Total (N)	347	457	393	1197

in Patna (67 per cent) followed by Bhubaneswar (53 per cent) and Baroda (47 per cent).

Information regarding previous abortion experience revealed that for about 16 per cent of the women, this was the second occasion for seeking MTP (Table 3). It is important to note that in a good proportion of the cases ( $N=86$ , 45 per cent) the previous pregnancy had ended in a spontaneous abortion. A comparison across the states showed that the frequency of such repeaters was highest in Bhubaneswar (22 per cent) followed by Baroda (14 per cent) and Patna (11 per cent).

It is interesting to note that in the total sample, about one-fifth of the women registered for MTP had only one living child, and about 41 per cent had two living children (Table 3). In other words, 6 out of the 10 women seeking MTP had two or less children. The proportion of such acceptors was significantly higher in Bhubaneswar (64 per cent) and Baroda (71 per cent) than in Patna (43 per cent). Further, the women in Patna had a larger number of living children (mean = 3.0) than those in Bhubaneswar (mean = 2.3) and Baroda (mean = 2.1). This perhaps indicates that while a considerable number of women in Baroda and Bhubaneswar had accepted MTP as a spacing measure also, the majority of those in Bihar had undergone the procedure only to terminate childbearing.

An analysis of the women by the number of living sons showed that only about 18 per cent had no son (Table 3). The rest either had one son (46 per cent) or two or more sons (36 per cent). The inter-state picture showed that the proportion of women with two or more sons was highest in Patna (52 per cent) followed by Bhubaneswar (35 per cent) and Baroda (23 per cent). The mean number of living sons was estimated to be 1.6, 1.3 and 1.1 for Patna, Bhubaneswar and Baroda respectively.

Table 4 presents the sex combination of the living children at the time of seeking MTP.

As can be seen from Table 4, about 24 per cent of the women had one or more sons and no daughter, while 15 per cent had more son(s) than daughter(s), the most frequent combination being two sons and one daughter. About 30 per cent had an equal number of son(s) and daughter(s), one son and one daughter being the most frequent combination. Another 13 per cent had fewer son(s) than daughter(s) while the rest (18 per cent) had no son. In the case of no son (or no daughter), most of the women were young, had not achieved the desired family size and had only one child. The analysis thus shows that the MTP acceptors exhibited a certain degree of son preference as 68 per cent had decided to undergo MTP only after having more sons than daughters (38 per cent), or at least, an equal number of sons and daughters (30 per cent). Such son preference was somewhat stronger in Patna (72 per cent) than in Bhubaneswar (62 per cent) and Baroda (63 per cent).

TABLE 4

Percentage distribution of MTP acceptors by sex combination of living children at the time of seeking MTP

Sex combination	Patna	Bhubaneswar	Baroda	Total
Only sons	18.1	17.0	25.0	23.6
More sons than daughters	25.2	13.8	6.4	14.5
Equal sons and daughters	28.2	31.0	31.5	30.4
Less sons than daughters	13.2	11.7	14.5	13.2
No son	15.0	26.5	22.6	18.3
	100.0	100.0	100.0	100.0
Total (N)	347	457	393	1197

All these findings collaborate our earlier observation that the MTP seekers in Patna were largely those who had achieved their desired family size and sex combination of children; thus abortion was sought mainly to stop childbearing, whereas at the other two locations at least some of them (17 to 18 per cent) did so to space births (see Table 6). This is further confirmed by Table 5 which shows that about 29 per cent of the total women wanted an additional child after undergoing MTP for the current pregnancy. The proportion of such women in Patna, Bhubaneswar and Baroda were reported to be 24, 30 and 32 respectively. In Baroda, quite a few (7 per cent) were indecisive about their fertility intentions.

TABLE 5

Percentage distribution of MTP acceptors desiring at least one more child

Desire for one more child	Patna	Bhubaneswar	Baroda	Total
Yes	23.6	29.5	32.3	28.8
No	76.4	69.5	61.1	68.8
Depends	—	1.0	6.6	2.6
	100.0	100.0	100.0	100.0
Total (N)	347	457	393	1197

### Reasons for Seeking MTP

The answers received when the women were probed to find out why they wanted to terminate the pregnancy indicated that about 67 per cent of the total MTP acceptors had achieved their desired family size and did not want any additional child (Table 6). About 27 per cent felt that their last child was too young, 16 per cent said that they wanted to delay the birth

of their next child for spacing purposes, while 7 per cent felt that their health was not good enough to have another child.

**TABLE 6**  
**Percentage distribution of MTP acceptors by reason(s) for accepting MTP\***

	Patna	Bhubaneswar	Baroda	Total
Do not want more child/ have enough children	75.2	69.8	57.7	67.2
Poverty	15.0	1.1	6.2	6.8
Difficulty in child rearing	8.9	3.7	7.0	6.3
Last child is too young	32.9	20.8	27.9	26.6
Delay birth of next child	9.8	17.5	19.7	16.0
Health problems	12.1	1.8	8.9	7.1
Hindrance in job	4.0	0.9	1.4	2.0
Husband's decision	1.2	1.5	2.9	1.9
Other	6.7	3.5	6.7	6.2
Total (N)	347	457	393	1197

A closer look at the table clearly indicates that only in about 27 to 28 per cent of the cases, MTP was sought for spacing purposes, the rest were not interested in any additional children. All other reasons such as poverty, difficulty in child rearing etc. were mainly mentioned to justify their adoption of MTP. These observations confirm our earlier findings which show that only 29 per cent of the women were desirous of additional children whereas the rest wanted to stop childbearing.

A comparison across states showed that the proportion who clearly mentioned stopping of childbearing as their main motive for MTP acceptance was highest in Patna (75 per cent) followed by Bhubaneswar (70 per cent) and the least in Baroda (58 per cent).

The proportion who mentioned spacing between births as the motive for seeking MTP was understandably lowest in Patna (10 per cent) and highest in Baroda (20 per cent).

An inquiry as to which spouse had taken the decision to abort the current pregnancy revealed that in most of the cases (93 per cent) it was a joint decision of the husband and wife, in 4 per cent of the cases the decision had been solely the husband's. No significant state variation was observed except in Patna where "self decision" was reported by about 10 per cent of the MTP acceptors.

### **Contraceptive Behaviour**

To assess whether the unwanted pregnancies of the MTP acceptors were

due to their lack of knowledge about contraceptives, their inaccessibility, or failure of the method used, each of them was asked a series of questions about their past contraceptive status and related issues. An analysis of their answers are presented in the following sections.

### *Knowledge of family planning methods*

Table 7 shows that knowledge of contraceptives was universal and as many as 70 per cent of the MTP acceptors could mention five or more modern methods of family planning, while another 20 per cent were aware of three to four contraceptive methods. A scant 1.5 per cent were not aware of any family planning method. The analysis also showed that most of them (93 per cent) were aware of at least one spacing method; it is important to note that about 7.4 per cent of the women were not aware of any temporary method.

TABLE 7  
Percentage distribution of MTP acceptors by number of  
modern family planning methods known

Knowledge of	Patna	Bhubaneswar	Baroda	Total
<i>Any modern method</i>				
None	3.1	0.4	1.2	1.5
1-2	13.3	5.7	8.6	8.8
3-4	32.0	18.4	11.8	20.0
5+	51.6	75.5	78.4	69.7
Mean	4.02	4.53	4.48	4.37
SD±	1.42	0.96	1.16	1.19
<i>Any modern spacing method</i>				
None	11.5	4.3	7.5	7.4
1	13.0	9.9	7.5	9.9
2	22.8	9.4	3.4	11.2
3+	52.7	76.4	81.6	71.5
Mean	2.25	2.59	2.61	2.50
SD±	1.17	0.86	0.94	0.99
Total (N)	347	457	393	1197

The level of knowledge among the MTP acceptors was relatively low in Bihar, both with respect to the total number of family planning methods known (mean = 4.0) as well as knowledge of spacing methods (mean = 2.3) as compared to their counterparts in Bhubaneswar and in Baroda (in these areas, the means were around 4.5 and 2.6). Considering the level of education, the high awareness of family planning methods among the MTP acceptors is not surprising. It also indicates that lack of knowledge of contraceptives was not a contributing factor to their unwanted pregnancy.

*Family Planning User-ship at the Time of Conception*

About 81 per cent of the couples were not using any family planning method at the time when they became pregnant while the remaining 19 per cent were using one or the other contraceptive (Table 8). A break-up of the contraceptive use pattern shows that they were depending on the condom (10.6 per cent) and the pill (4 per cent); six couples had been sterilised.

**TABLE 8**  
Percentage distribution of MTP acceptors by family planning status at the time of becoming pregnant

FP status	Patna	Bhubaneswar	Baroda	Total
Not using FP	86.7	74.0	82.9	80.7
Using FP	13.3	26.0	17.1	19.3
Vasectomy	—	—	0.5	0.2
Tubectomy	0.3	—	0.7	0.3
IUD	0.3	2.8	0.7	1.7
Pill	2.9	6.3	1.9	3.9
Condom	8.3	11.9	12.6	10.6
Traditional	1.5	5.0	0.7	2.6
Total (N)	347	457	393	1197

Further questioning to determine whether the pregnancy was a result of method failure or irregular use of contraceptives revealed that over half (56 per cent) of the pregnancies stemmed from irregular contraceptive use (Table 9). However, the remaining 44 per cent believed that their pregnancy was due to the failure of the method, bursting of the condom was quite often mentioned as the cause of pregnancy.

**TABLE 9**  
Percentage distribution of MTP acceptors using family planning methods by whether pregnancy was caused by method failure or irregular use

	Patna	Bhubaneswar	Baroda	Total
Irregular use	65.2	55.5	52.1	56.4
Method failure	34.8	49.5	47.9	43.6
Method failed				
Vasectomy	—	—	2.8	0.8
Tubectomy	2.2	—	4.2	1.7
IUD	2.2	6.7	9.9	6.8
Oral pill	—	9.2	2.8	5.5
Condom	28.2	20.2	25.4	23.3
Traditional	2.2	8.4	2.8	5.5
Total	46	119	67	232
Not using FP	301	338	326	965

*Contraceptive Plan and Preferences*

At the time of registration each woman was asked as to which method she would like to adopt after MTP. The results indicate that an almost equal number (about 42 per cent each— showed a preference for sterilisation and the IUD. About 5 per cent opted for the pill while a few (3.4 per cent) intended to use the condom after MTP (Table 10).

A comparison across states showed that a significantly higher proportion (59 per cent) of the women in Patna as against those in Bhubaneswar (34 per cent) and Baroda (38 per cent) had opted for sterilisation. In contrast, 54 per cent of the acceptors in Baroda as against 33 per cent in Patna and 38 per cent in Bhubaneswar, intended to accept the IUD after undergoing MTP. Preference for other spacing methods such as the oral pill or condom was least in Baroda (2.4 per cent) and highest in Bhubaneswar (18.5 per cent).

TABLE 10

Percentage distribution of MTP acceptors by method planned to accept after current MTP

	Patna	Bhubaneswar	Baroda	Total
No method	2.0	2.0	1.7	1.9
Sterilisation	58.8	33.7	37.7	42.2
IUD	32.5	38.1	53.9	41.9
Oral pill	3.2	9.6	1.7	5.1
Condom	0.6	7.9	0.7	3.4
Traditional	—	5.7	—	2.1
Not decided	2.9	3.0	4.3	3.4
Total	347	457	393	1197

The main reason for choosing sterilisation over other contraceptive methods was its permanency as reported by 57 per cent of the MTP acceptors; 63 per cent also expressed lack of desire for additional children as a reason (Table 11). Confidence that it is a foolproof method (7 per cent) and "easy to adopt" (8 per cent) were other important reasons for preferring sterilisation to other methods.

The main reason for choosing the IUD, pill and condoms were their irreversibility. Apart from this, about 16 per cent of the MTP acceptors who were planning to accept the IUD felt that their last child was too young for them to accept sterilisation, while 11 per cent wanted an insertion on the advice of their doctor. "Fear of side effects of other methods" and "easy to use" were the two main attributes in favour of the oral pill, and those who proposed to use the condom, did so because it is a temporary method (49 per cent), has no side effects (51 per cent) and is easy to use (44 per cent).

TABLE 11

Percentage distribution of MTP acceptors by reason(s) for preferring one or the other method after MTP\*

	Sterilisation	IUD	Pill	Condom	Traditional
Permanent method	56.9	0.8	—	—	3.8
Want no more child	62.9	17.4	12.9	14.6	26.9
Spacing method	—	68.1	51.6	48.8	38.5
No side effect	4.9	7.4	6.5	51.2	34.6
Fear of side effect	3.1	1.2	24.2	2.4	19.2
No fear of failure	6.6	7.4	1.6	4.9	7.7
Easy method	8.2	4.3	33.9	43.9	11.5
Doctor's advice	2.1	10.8	12.9	—	—
Due to health problem	5.2	7.2	6.5	2.4	—
Last child is too young	2.5	16.4	6.5	—	—
Not interested in other methods	2.3	5.3	1.6	—	—
Husband's decision	0.6	5.7	6.5	12.2	3.8
Want son	0.2	0.8	—	—	—
Due to poverty	13.0	2.9	—	—	—
Other reasons	27.2**	10.8	12.9	4.9	7.7
Total (N)	505	502	61	41	25

\* The percentages add up to more than 100.0 because of multiple answers

\*\* Mainly 'the wife is 'overage' and 'government scheme'

### Contraceptive Use Dynamics of MTP Acceptors: Observations from the Follow-up Survey

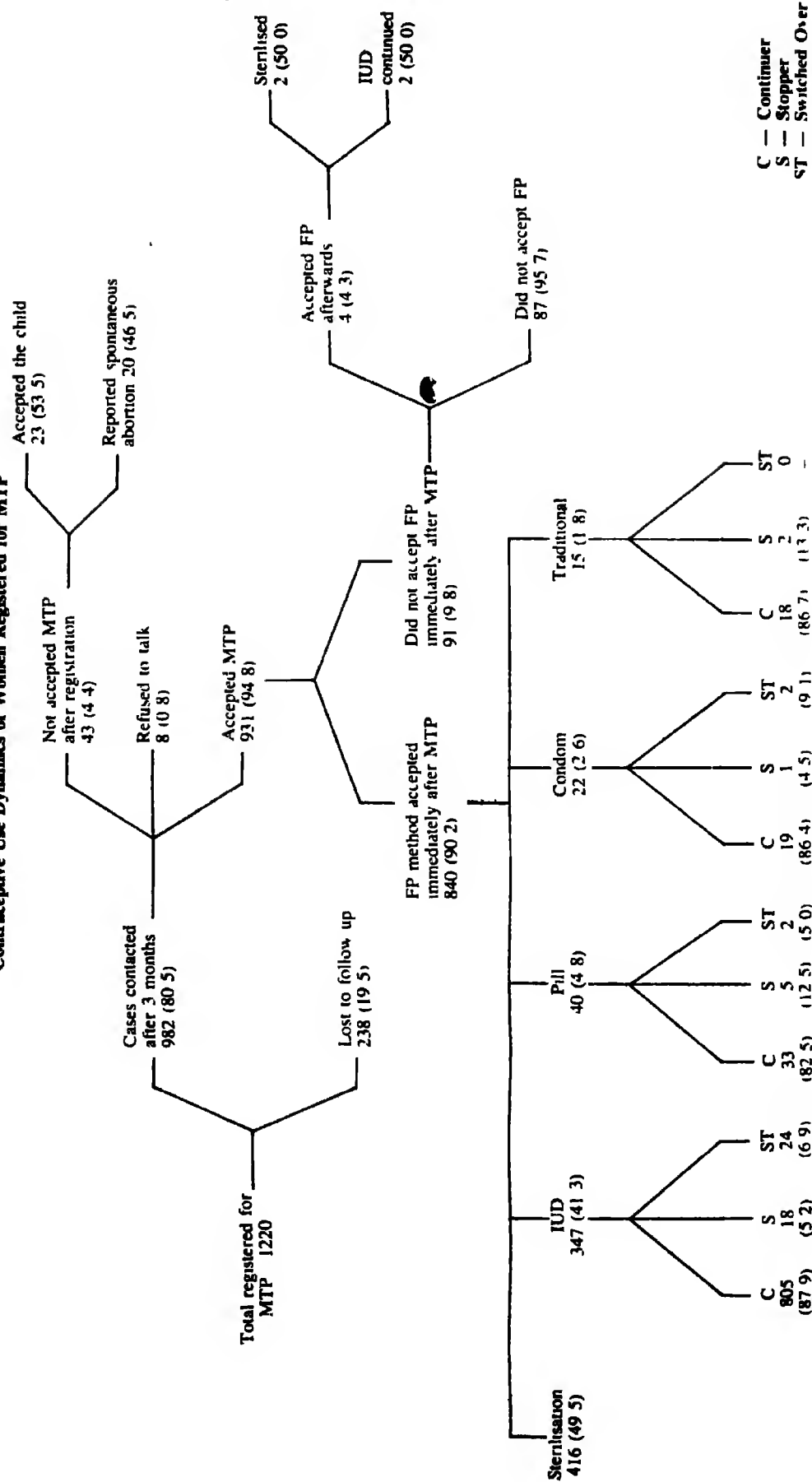
All the women who had registered for MTP were followed-up after 3 months. As mentioned earlier, 238 women were lost to follow-up. Of the 982 women who were contacted, 43 (4.4 per cent) had not accepted MTP, and eight refused to be interviewed. The remaining 931 (94.8 per cent) had accepted MTP and were interviewed for their contraceptive behaviour following the MTP.

To ensure that the 238 women who were lost to follow-up were not different from the 982 who were contacted and interviewed for the follow-up survey, their socio-economic and demographic profiles as recorded at the time of registration, were compared. The analysis showed that the former were slightly poorer and a larger proportion was illiterate as compared to the latter, and were slum dwellers who had migrated due to various reasons including, slum clearance schemes. However, the differences were statistically insignificant.

Some of the salient observations made from the follow-up survey of the MTP acceptors are presented in Table 12 and Chart 1. Of the 931 women who had accepted MTP, 840 (90.2 per cent) had adopted one or the other contraceptive immediately after undergoing MTP, and 4 had done so



FIGURE 1  
Contraceptive Use Dynamics of Women Registered for MTP



subsequently (Table 12). Thus altogether 844 (90.6 per cent) had accepted contraception after pregnancy termination.

TABLE 12

**Dynamics of post-MTP contraceptive use: Results of the 3-month follow-up survey**

	Patna	Bhubaneswar	Baroda	Total
A Total MTP acceptors registered	347	457	416	1220
Per cent lost to follow-up	15.0	14.2	29.1	19.5
Per cent contacted and interviewed after 3 months	85.0	85.8	70.9	80.5
B. Of the total contacted.	295	392	295	982
Percentage accepted MTP	95.9	99.7	90.5	94.8
C. Out of the total accepted MTP	283	391	257	931
Per cent accepted FP at the time of MTP	80.9	93.6	95.3	90.2
Per cent accepted FP afterwards	0.4	—	1.2	0.4
Per cent not accepted FP	18.7	6.4	3.5	9.4
D. Choice of method of those who accepted FP.	230	366	248	844
Sterilisation	71.3	36.3	48.8	49.5
Spacing methods	28.7	63.7	51.2	50.5
IUD	24.8	46.2	49.6	41.4
Pill	2.6	8.7	0.8	4.7
Condom	1.3	5.2	—	2.6
Traditional	—	3.6	0.8	1.8
E Of those who accepted a spacing method.	66	233	127	426
Continued with the same method	72.7	94.0	74.8	85.0
Switched over to other method	10.6	3.4	9.4	6.3
Discontinued	16.7	2.6	15.8	8.7
F FP status of total MTP acceptors after 3 months.	287	392	295	974
Practicing FP.	76.3	91.8	77.3	82.9
With initial method	73.9	89.8	72.2	79.7
With switched over method	2.4	2.0	4.1	3.2
Not practicing FP.	23.7	8.2	22.7	17.1
Accepted and discontinued	3.8	1.6	6.8	3.8
Did not accept	19.9	6.6	15.9	13.3

A break-up of the 844 post-MTP family planning acceptors according to their choice of contraceptive showed that half of them had accepted a terminal method while the other half had accepted a spacing method, primarily the IUD (41.4 per cent). Very few had adopted the pill (5 per cent) or the condom (3 per cent). A comparison of their contraceptive use pattern with that of the intentions expressed by them at the time of registration for MTP (See Table 10) indicated that both matched well with each other. In other words, their expressed intentions were quite consistent with their subsequent contraceptive behaviour.

A comparison across the states showed that sterilisation was accepted by a much larger proportion of MTP acceptors in Patna (71 per cent), followed

by those in Baroda (49 per cent) Bhubaneswar (36 per cent). The oral pill and condom found greater acceptance in Bhubaneswar (14 per cent) than in Patna (4 per cent) or Baroda (1 per cent). Further, of the 426 women who had accepted a spacing method after MTP, 85 per cent were continuing with the same method, 6 per cent had switched over to other methods, and 9 per cent had discontinued family planning practice. Such discontinuation was higher in Patna (17 per cent) and Baroda (16 per cent) than in Bhubaneswar (3 per cent).

Similar analysis for all the MTP acceptors, including those who had accepted sterilisation, showed that at the end of third month, 83 per cent of the total MTP acceptors were practicing family planing whereas 17 per cent were not. A break-up of the 83 continuers showed that 80 per cent were continuing with the initial method (method accepted after undergoing MTP) while the rest (3 per cent) had continued to contracept with an alternative method. Similarly, of the 17 per cent who were not contracepting at the time of the follow-up survey, 13 per cent had not accepted any method post-MTP while the remaining 4 per cent had discontinued contraception. Statewise findings indicated that the number of non-contracepting women was highest in Patna (24 per cent), closely followed by Baroda (23 per cent), and the least in Bhubaneswar (8 per cent).

Thus, the analysis shows that after accepting MTP, the majority of the women at all the study locations started using some form of contraception. However, it is a matter of concern that a substantial proportion of the women (23-24 per cent) both at Patna and Baroda remained exposed to unwanted pregnancy as they did not choose to adopt family planning after MTP.

## SUMMARY AND CONCLUSION

The present paper studies the socio-economic and demographic profiles of women who sought assistance from Government clinics at Patna, Bhubaneswar and Baroda to obtain MTP. It also highlights their contraceptive behaviour before getting pregnant and after accepting MTP.

The study found that women registering for MTP are young (28 years) and relatively better educated than their counterparts among the general population. The majority sought MTP for their 2nd, 3rd or 4th pregnancy, with more women in Patna seeking an abortion for higher order pregnancies than in Bhubaneswar and Baroda. Similarly, more than half of the women in Patna had three or more living children as against 2-3 children in the other two locations. Around 80 per cent of the women at all locations had at least one living son. The analysis also showed that while in Patna, MTP was generally sought by women who had achieved their desired family size and wanted to stop childbearing, in the other two locations particularly in Baroda, some of them also did so to delay or space their next child.

The study revealed that eight out of the ten women seeking MTP were not using any family planning method when they got pregnant. The remaining depended on spacing methods, primarily the condom. Further probing also revealed that more than half (56 per cent) of those who were using a family planning method had become pregnant as a result of irregular contraceptive use, while method failure was responsible for the rest becoming pregnant.

Reasons for not practicing family planning when the women did not want any more children were not collected in this study. However, lack of knowledge of contraceptives could be definitely ruled out as a reason for non-acceptance as almost all the women knew at least 4 to 5 modern methods of family planning.

A follow-up survey, three months after the MTP, revealed that the majority had accepted family planning after undergoing MTP, and 83 per cent had continued to do so three months after the MTP. Almost half of them had accepted sterilisation while the remaining half were using a spacing method, primarily the IUD. Again, at the time of the follow-up survey, the majority (85 per cent) of the spacers were found to be continuing with the same method, 6 per cent had switched over to another method, while the remaining 9 per cent had stopped using contraceptives altogether.

The study also showed that about one-fourth of the MTP acceptors in Patna and Baroda were not using any family planning method and hence were again exposed to unwanted pregnancy. It is also important to note that at least in 11 per cent of the cases in Patna, 22 per cent in Bhubaneswar and 14 per cent in Baroda, the women had already undergone one or two abortions before the present MTP, and in most, the previous pregnancy had also been aborted. Considering the health hazards of abortion, this is a matter of concern and needs the attention of the programme managers. All attempt should be made to promote family planning after MTP and to discourage repeated abortion by educating women about the adverse consequences of seeking MTP frequently.

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# **THE INFLUENCE OF A COMMUNITY-BASED DISTRIBUTION PROGRAMME ON CONTRACEPTIVE CHOICE**

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## **INTRODUCTION**

The history of the Indian family planning programme, which dates back to 1951 when India adopted an official policy for controlling population growth, can be considered as a series of experiments utilising various approaches to enable people to accept and practice suitable family planning methods to postpone pregnancy or to prevent it. The initial Indian effort during 1951-60 was clinic-based and medically-oriented. Couples were expected to visit a family planning centre to receive consultancy and family planning services from a doctor, the idea being that people in need of family planning services would become aware of the availability of such services at the nearby health/medical facility and would be motivated to utilise them. Realising that mere provision of services would not in itself guarantee a reasonable level of consumer response, the emphasis was shifted in 1961. An 'extension approach' was adopted which was clinic-based but community-oriented, and in which, all family planning services were offered by mobile extension workers under a 'cafeteria programme'.

A separate department for family planning was set up by the Government of India in 1965 and in the subsequent year, family planning was integrated with maternal and child health care. In addition to setting annual targets, incentives were offered for sterilisation and IUD. Consequently, the IUD made a spectacular beginning but soon reached a low ebb.

Efforts were also made to involve community level institutions such as post offices and panchayats as well as local volunteers to act as 'depot holders' for selling condoms at a nominal price, and retaining the entire sale amount. However, the distribution of condoms through clinics as also through other outlets was observed to suffer from certain limitations. For example, supplies were not available as and when required, the users had to travel long distances to reach the supply centres, and there was hesitancy on the part of the users to furnish personal information before receiving contraceptive supplies as they preferred to remain anonymous. In order to overcome these difficulties, efforts were made to promote the condom, which is simple, easy

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to use, and a non-clinical method, more aggressively by distributing it through commercial channels. The condom was given the brand name —Nirodh— (protection) and the Nirodh Social Marketing Programme was launched in 1968 in collaboration with six companies—Brooke Bond, Hindustan Lever, Indian Tobacco Company, Lipton, Tata Oil Mills Company, and Union Carbide—by tagging the distribution of condoms with fast-moving consumer goods such as tea, soap, cigarettes, cooking oil and battery cells through an estimated 40,000 retail shops.

Some degree of interest in stocking and selling Nirodh was ensured by providing profit margins for the wholesaler, stockist and retailer. Subsequently, the programme was further expanded by involving six more companies (Indian Drugs and Pharmaceuticals Ltd., Smith Stanistreet Pharma, Indian Oil, Hindustan Petroleum, Bharat Petroleum, and Arasan Match Industries) thereby enabling the utilisation of over 400,000 retail outlets of various kinds<sup>1</sup>.

The period 1974-78, which may be considered as a landmark, saw the enunciation of the first population policy in 1976, and its marginal revision in 1977. Covering a wide range of issues related to population, the policy laid greater emphasis on tackling the population problem mainly by sterilisation supported by a package of incentives. The immediate result of this emphasis was that in 1976-77 India recorded an astronomical 12.5 million new family planning acceptors, two-thirds of whom opted for sterilisation. There was, however, a very strong resentment to the alleged sterilisation excesses resulting from over-zealous programme implementation leading to a set-back of the programme in subsequent years. In 1981, the census revealed that the population had continued to grow at a rapid rate of 2.5 per cent annually.

An analysis of the Indian family planning programme indicates that the introduction of the system of annual targets in terms of the number of eligible couples to be recruited for various methods in 1961, resulted in a 'method bias' towards sterilisation. Sterilisation received emphasis with targets being set state-wise, district-wise, department-wise and worker-wise, thereby neglecting the provision of information about other available family planning methods. Moreover, the heavy incentives attached to sterilisation offered a substantial amount of money to the acceptor by way of compensation for loss of wages. Doctors, paramedical staff and motivators involved in the sterilisation programme also received cash incentives and tended to lure eligible persons for sterilisation. Further, programme officials encouraged the sterilisation operation - a one-shot method found easy to count and report.

As a consequence of the sterilisation bias, the family planning programme tended to ignore the promotion of temporary methods and the needs of young couples who had not completed their desired family size as well as of those who were not prepared to undergo the sterilisation operation. An eligible

couple survey conducted in Madhya Pradesh revealed that over-emphasis on sterilisation had not catered to the family planning needs of 94.6 per cent of young eligible couples (wife below 30 years, with less than three living children) while 70.3 per cent of older couples (wife above 30 years and having three or more children) had been covered by sterilisation services<sup>2</sup>. Protecting young couples with spacing methods is known to have a greater impact on fertility than protecting older, high parity couples by sterilisation<sup>3,4</sup>. Thus, the need for promoting contraceptive methods to delay conception by initiating and sustaining community-based, community-oriented and community-run programmes became increasingly apparent.

Since 1949, the *Family Planning Association of India (FPAI)*, a national voluntary organisation, has been vigorously promoting family planning. The Association has been in the forefront in undertaking many innovative programmes in addition to participating in the formulation of national policies and programmes, and complementing and supplementing governmental activities. In addition to establishing model clinics in the 1970s, FPAI also started Mobile Education and Service Units based on the extension approach in order to take family planning education as well as services to the doorstep of needy couples through mobile medical and paramedical units supported by extension workers.

Realising that people's participation in the programme could be ensured by the adoption of a holistic approach to family planning, FPAI has developed and implemented a number of integrated family planning projects in different parts of the country. In these projects, efforts are made to link family planning with village betterment activities, for improving literacy levels particularly among women, and for enhancing their status through awareness programmes and assistance to undertake income generating schemes, particularly by needy women. The enthusiasm generated among the people has led to the promotion of family planning by village volunteers through their own organised interest groups by way of exerting peer group pressure on eligible couples for adoption of family planning. In addition, the volunteers take an active part in promoting family planning services by undertaking the distribution of condoms and providing referral services for those opting for the IUD and sterilisation. Being a comprehensive approach, this community-oriented programme includes not only community-based service delivery but also information, education and communication activities, link-up of family planning and health services with other development programmes at the community level, and the involvement of the community in various programme-related activities leading to community action for family planning.

#### **THE FPAI VARANASI CBD PROJECT**

In a number of countries, community-based distribution (CBD) of con-

traceptives has not only increased contraceptive prevalence from low levels of about 2 to as much as 15 per cent, and registered comparatively better performance in CBD areas as compared to the clinic-based system.<sup>3,6</sup> Recognising this, and based on its own experience of operating community-oriented integrated family planning programmes which include community-based distribution of contraceptives through village level volunteers, FPAI decided in 1979, to take up a large-scale CBD project in collaboration with the Department of Preventive and Social Medicine of the Banaras Hindu University in Varanasi in Uttar Pradesh. The underlying assumptions for initiating the project were that (1) there was an unmet need for family planning in the selected villages which were economically poor and had low literacy levels, and (2) the CBD approach which utilises existing human and other resources of the community could considerably narrow the gap between the need and the provision of family planning services.

The FPAI Varanasi CBD Project was implemented from 1980-1989\* in 1242 villages spread over 1465 kms with an estimated population of 1.26 million and 222,975 eligible couples (1989 survey conducted by the Varanasi CBD Project). This article reports the changes observed in the acceptance of contraceptives in the CBD Project over a ten-year period from 1980 to 1989, and analyses the influence of the community-based programme on the choice of contraceptives exercised by the acceptors

## PROJECT METHODOLOGY

The methodology adopted by the Project involved the utilisation of local volunteers for motivating potential family planning acceptors, distributing non-clinical contraceptives and referring IUD and sterilisation cases. Two contraceptives - the condom and the oral pill - were offered in specially designed packets bearing the FPAI logo. The condoms, named "Sona", were in a packet of six lubricated coloured condoms, while the pill, a 28-day cycle of Primovlar 30ED, was sold under the name "Mamta". The stock of condoms and oral pills was received from the International Planned Parenthood Federation, London. While the supply of the oral pill was adequate throughout the Project period, that of condoms suffered disruption. Delays in receiving clearance from the Government of India resulted in the accumulation of stock which came close to the expiry date and had to be distributed outside the CBD programme as well to avoid wastage. In 1989, such delays combined with logistical problems of transporting the condom supplies cleared by the Government, caused the Project's condom distribution programme to suffer severely. The Project attempted to purchase condoms from the open market

\* Since 1990 the Project is being continued as a University programme with financial assistance from the University Grants Commission, New Delhi



but was unable to get such large quantities. Timely support was also not available from Government sources and free supplies when available, were not well accepted by the users as they perceived a difference in quality. The last year of the Project was thus the worst affected in this respect.

Family planning services were offered along with specific primary health care supplies aimed at reducing maternal, neonatal and infant mortality, preventing malnutrition, and treating minor ailments commonly observed among children and mothers in the Project villages. Community leaders were involved in the selection of CBD holders, called Sanyojaks, as also in identifying the location of the CBD outlet which was provided free of rent. Educational and supportive developmental activities were planned in consultation with local voluntary groups who also mobilised resources and provided in-kind support.

The number of Sanyojaks increased from 207 in the first year of the Project to 1070 in 1990, and included 12 women. In addition, 325 other local volunteers served as agents of the Sanyojaks in large villages. The occupation of the CBD holders varied from Registered Medical Practitioners (RMP) to agriculturists representing different social strata as well as religious groups. The CBD holders were selected for their acknowledged interest in serving the community, their general acceptability and their having an assured income from an independent source.

The CBD holders were given a three-day initial training and one-day refresher courses by Project staff, in family planning motivation, screening of cases for oral pills by using a check-list prescribed by the government, identification of users experiencing side-effects as a result of pill intake, management of minor side-effects and referrals, the basics of health care as related to the health care items distributed by them, provision of follow-up services, and keeping simple records.

The acceptors were screened by the CBD holders and those recommended for pill usage were examined by a physician at one of the clinical sessions held periodically in each Project village, prior to being provided with oral pills. Primary health care supplies were given to the CBD holders on a no-profit no-loss basis and a service charge was collected by them. Regular clinics were conducted by an MD student in two Blocks and by two Field Assistants who were RMPs in the other three Blocks. Private medical practitioners were involved in screening oral pill acceptors in the remaining three Blocks. CBD holders who were registered medical practitioners also prescribed oral pills and attended to minor complaints. In addition, one of the two Lady Field Assistants provided IUD insertion services in the villages. Users having major complaints were referred to nearby government hospitals. Facilities for referral services for sterilisation operations and IUD insertions were arranged

at the Banaras Hindu University Hospital as well as at hospitals run by the Government and other NGOs.

Though a service charge was collected by the Sanyojaks for the health care items, family planning services were offered free of charge up to 1985. In 1985, the Project introduced social marketing of contraceptives and started collecting a nominal service charge of Re.1 from the user for the supply of 8 coloured condoms or one cycle of oral pills, or 6 foam tablets. The service charges were uniform for all users and were intended to ensure contraceptive use. The CBD holder retained half the service charges collected by him/her and remitted the other half to the Project. Though the amount collected was not substantial, it was observed that the main motivation for the CBD holder was that he/she was able to command high respect in the community by virtue of CBD work.

Follow up was done on a regular three-monthly basis in order to monitor and sustain use continuation. Acceptors who wanted to discontinue method use were asked the reason for discontinuation, and counselled accordingly to change over to another method, including the IUD or sterilisation where appropriate. Those willing to adopt an alternate method were provided the necessary service.

## IMPACT OF THE FPAI VARANASI CBD PROJECT

### Choice of Contraceptive

The introduction of the CBD programme brought about a perceptible change in the acceptance of family planning methods in Project villages. During the very first year, the Project was able to recruit 2388 acceptors for the oral pill and 2247 acceptors for condoms as compared to none for the IUD and 12 for sterilisation. Further analysis of family planning acceptance over the ten-year period, 1980 to 1989, indicates a general increase in new acceptance over the years. A summary of the performance in terms of total recruitment by method during 1980-89 is as follows:

Recruitment of new acceptors, 1980-89

Method	Number	Per cent
Condom	55,476	55.8
Oral pill	22,623	22.8
Foam tablet	1,606	1.6
IUD	8,148	8.2
Sterilisation	11,515	11.6
<b>Total</b>	<b>99,368</b>	<b>100.0</b>

From Tables 1 to 5 it can be inferred that the CBD approach has led to the recruitment of large a number of new acceptors of temporary methods. On the whole, the condom has been the most popular method of choice (55.8 per cent new acceptance), followed by the oral pill (22.8 per cent new acceptance). It is evident that the CBD approach has helped many couples to exercise their choice in favour of temporary methods. It is interesting to note that a small percentage of acceptors also opted for foam tablets (1.6 per cent) which had been introduced in the CBD programme but were not available in the regular family planning programme of the government.

Table 1 which presents year-wise new acceptor figures for the condom from 1980 to 1989, indicates a considerable variation in the recruitment of new condom acceptors. The first four years recorded a steady progressive trend with a sudden fall in 1985, coincident with the introduction of social marketing, to a level a little above that registered during the first year of the Project, gradually increased during the next three years, and again fell during the last year of the Project.

**TABLE 1**  
**New condom acceptors recruited and continuing year-wise, 1980-89**

Year	Number of acceptors					
	Recruited during the year	Dropped out	Changed to other methods	Total discontinuing during the year	Continuing at the end of the year	% of acceptors continuing at the end of the year
1980	2247	65	291	356	1891	84.2
1981	6867	426	722	1148	7610	86.9
1982	5987	1480	1011	2491	11106	81.7
1983	6821	2084	1255	3339	14588	81.4
1984	6330	8988	1137	10125	10793	51.6
1985	2900	6881	811	7692	6001	43.8
1986	4352	1604	705	2309	8044	77.7
1987	7173	1640	254	1894	13323	87.6
1988	7634	985	248	1233	19724	94.1
1989	5165	21013	211	21224	3665	14.7
<b>Total</b>	<b>55476</b>	<b>45166</b>	<b>6645</b>	<b>51811</b>	<b>3665</b>	

Thereafter, the number of new acceptors again increased during the next two years, but registered a fall during the last year of the Project. The number of continuing acceptors showed an encouraging trend - excluding 1989, during which the performance was affected by problems of timely supplies. The percentage of acceptors continuing at the end of the year to those recruited (cumulative) varied from 43.8 per cent to 94.1 per cent, and remained above

80 per cent for six of the ten years of the Project; the average over the 10-year period was 70.4 per cent.

Table 2 provides year-wise details of new and continuing oral pill acceptors. Despite the limitations of the CBD approach in terms of requiring medical back-up prior to the prescription of the oral pill, the Project was able to recruit around 2000 new pill acceptors every year. As in the case of the condom, the lowest recruitment for the pill was observed in 1985. The percentage of continuing acceptors to the total recruited varied from 40.7 per cent in 1984 to 90.2 per cent in 1980, the average being 63.4 per cent. This figure was over 60 per cent during six of the ten years' duration of the Project.

**TABLE 2**  
**New oral pill acceptors recruited and continuing year-wise, 1980-89**

Year	Number of acceptors					
	Recruited during the year	Dropped out	Changed to other methods	Total discontinuing during the year	Continuing at the end of the year	% of acceptors continuing at the end of the year
1980	2388	219	14	233	2155	90.2
1981	2091	1934	181	2115	2131	50.2
1982	2548	924	576	1500	3179	67.9
1983	2894	1250	619	1869	4204	69.2
1984	2056	2938	775	3713	2547	40.7
1985	1523	1808	327	2135	1935	47.5
1986	1973	987	457	1444	2464	63.1
1987	3228	1497	175	1672	4020	70.6
1988	2247	1140	238	1378	4889	78.0
1989	1675	2726	176	2902	3662	55.8
Total	22623	15423	3538	18961	3662	

Table 3 indicates that recruitment for foam tablets began in 1981 with 127 new acceptors. The progress was slow during the first four years, followed by a drop in 1985 and 1986 and an upward trend in the next two years. The percentage of continuers among the total acceptors recruited ranged from 44.3 per cent to 96.9 per cent, with an average of 74.2 per cent. Though small in number, most of the couples who opted for foam tablets appeared to be satisfied with it.

Table 4 reveals that though not sought in 1980, the IUD continued to be popular among couples with over 90 per cent of the acceptors using the method at the end of any year. As expected, the CBD approach also enlisted varying numbers of sterilisation acceptors during the Project's ten-year duration as can be seen from Table 5.

**TABLE 3**  
**New foam tablet acceptors recruited and continuing year-wise, 1980-89**

Year	Number of acceptors					
	Recruited during the year	Dropped out	Changed to other methods	Total discontinuing during the year	Continuing at the end of the year	% of acceptors continuing at the end of the year
1980	0	0	0	0	0	0.0
1981	127	2	2	4	123	96.9
1982	276	30	33	63	336	93.4
1983	390	76	74	150	576	79.3
1984	241	361	94	455	362	44.3
1985	89	250	29	279	172	38.1
1986	97	52	18	70	199	74.0
1987	143	36	18	54	288	84.2
1988	145	32	18	50	383	88.5
1989	98	146	3	149	332	69.7
Total	1606	985	289	1274	332	

**TABLE 4**  
**New IUD acceptors recruited and continuing year-wise, 1980-89**

Year	Number of acceptors					% of acceptors continuing at the end of the year
	Recruited during the year	Dropped out	Changed to other methods	Discontinuing during the year	Continuing at the end of the year	
1980	0	—	—	—	0	0.0
1981	77	—	—	—	77	100.0
1982	604	43	16	59	622	91.3
1983	603	34	16	50	1175	95.9
1984	1205	102	29	131	2249	94.5
1985	966	141	36	177	3038	94.5
1986	1027	168	52	220	3845	94.6
1987	1107	86	29	115	4837	97.7
1988	1598	51	27	78	6357	98.8
1989	961	116	14	130	7188	98.2
Total	8148	741	219	960	7188	

**TABLE 5**  
**New sterilisation acceptors recruited, 1980-89**

Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
No. of acceptors	12	107	1420	1781	1941	1842	2668	765	526	453

Both Tables 4 and 5 indicate that even when the programme emphasises the use of condoms, oral pills, and foam tablets, a demand is generated for the IUD as well as for sterilisation. It is evident that the CBD programme has promoted the cafeteria approach by offering a greater choice of contraceptive methods.

An evaluation of family planning acceptance over the ten-year period shows a steady increase in the acceptance of family planning methods. When acceptors of all the three contraceptives, namely the condom, oral pill and foam tablets were taken together, the percentage of continuers to acceptors showed a very encouraging trend (Table 6).

TABLE 6

Total new contraceptive (condom, oral pill, foam tablet) acceptors recruited and continuing, 1980-89

Year	Number of acceptors			% of acceptors continuing at the end of the year
	Recruited	Dropped out	Total continuing at the end of the year	
1980	4635	589	4046	87.3
1981	9085	3267	9864	75.1
1982	8811	4054	14621	78.3
1983	10105	5358	19368	78.3
1984	8627	14293	13702	48.9
1985	4512	10106	8108	44.5
1986	6422	3823	10707	73.7
1987	10544	3620	17631	83.0
1988	10026	2661	24996	90.4
1989	6938	24275	7659	24.0
Total	79705	72046	7659	

With the exception of the three years namely, 1989—when supplies were badly affected; 1984—when the Project announced the introduction of social marketing; and 1985—when social marketing was actually introduced, the percentage of continuers to acceptors during each of the remaining years, varied between 73.7 per cent to 90.4 per cent. Therefore, it can be inferred that more than 70 per cent of those accepting a method can be found to be continuing its use at the end of any year, provided problems of logistics are taken care of and good follow up services are offered through the CBD network.

### Discontinuation of Chosen Method

Tables 1 to 4 as also Table 6, show that a substantial number of acceptors of family planning discontinued the method they had initially chosen

for a variety of reasons.

A study of Table 7 reveals that 'lack of supply' was mentioned as a reason for discontinuation of condom use during the first four years and the last year of the Project. The proportion of such dropouts among the total dropouts during each year ranged from 4.9 per cent in 1983 to 17.7 per cent in 1982, as high as 94 per cent in the last year when there was an acute supply problem, and no dropouts during the five years between 1985 to 1988. When 1989, the last year when the Project suffered as a result of inordinate delays in receiving contraceptive supplies, was excluded from the analysis, the proportion of those who dropped out due to 'irregular supplies' over the ten-year period, fell from 40.8 per cent to 3.0 per cent of the total dropouts during the ten-year Project period. Discontinuation due to pregnancy resulting from irregular use then showed up as a major reason—mentioned by 14.6 per cent of the total discontinuers—(excluding reasons such as 'want a child' and 'temporary migration of either spouse' which accounted for 13.6 per cent of the total dropouts each, and 'change over to another method' which accounted for 21.5 per cent). Discontinuation as a result of method dissatisfaction rose slightly from 5.9 to 9.8 per cent when 1989 data were excluded.

Those who specifically mentioned the introduction of social marketing as a reason for discontinuation accounted for a mere 5.5 per cent of the total dropouts (9.6 per cent excluding 1989). However, considered year-wise, discontinuation due to this reason predominated in 1985, when social marketing was actually introduced, accounting for as much as 36.1 per cent of the total 7692 discontinuers that year. During the next year, as the new approach took root, this figure dwindled to a low of 2.8 per cent. No dropouts were recorded in subsequent years as a result of social marketing.

On the other hand, the introduction of social marketing accounted for much less—22.2 per cent—of pill dropouts in 1985, with no dropouts thereafter, while 'lack of supply' again occurred largely during 1989. While no single major reason influenced the decision to discontinue pill use, method dissatisfaction and side effects were mentioned by about 13 per cent of the total dropouts, while about 9 per cent discontinued because they were pregnant due to irregular pill intake (Table 8). As many as one-fifth of the acceptors dropped out and switched over to another method.

Reasons for discontinuation among the foam tablet acceptors (Table 9) included irregular use (16.1 per cent) resulting in pregnancy, dissatisfaction with the method (14.3 per cent), and to change the method (22.7 per cent).

Lack of supplies of foam tablets as a reason for discontinuation was mentioned by 10.2 per cent of the total dropouts, and was again mainly confined to 1989. The introduction of social marketing accounted for 28.3 per cent of the 279 total discontinuers during 1985.

The major reasons which influenced IUD discontinuation (Table 10) were

TABLE 7  
Distribution of condom dropouts by reasons for discontinuation, 1980-89

Reason	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Total
Lack of supply	48	200	493	148	0	0	0	0	0	19965	20854 ( 40.3)
Pregnant due to irregular use	0	26	313	480	2328	900	454	291	248	129	4506 ( 8.7)
Wanting a child	1	15	263	385	1516	1151	332	193	207	195	4258 ( 8.2)
Temporarily migrated (husband/wife)	6	91	529	460	1338	827	333	257	219	198	4258 ( 8.2)
Accepted sterilisation	2	31	385	656	671	578	492	129	90	88	3122 ( 6.0)
Changed to another method	289	691	626	599	466	233	213	125	158	123	3523 ( 6.8)
Method dissatisfaction	58	52	0	163	1353	370	186	673	70	143	3068 ( 5.9)
Lost to follow-up	0	0	0	0	2185	471	79	51	85	187	3058 ( 5.9)
Social marketing	0	0	0	0	0	2779	64	0	0	0	2843 ( 5.5)
Supply from other sources	0	0	0	0	0	68	42	60	74	78	322 ( 0.6)
Objection of partner/other	0	0	0	0	38	12	0	26	53	118	247 ( 0.5)
Death of acceptor/husband	0	0	4	5	57	28	20	14	8	0	136 ( 0.3)
Misconception about ill effects	0	0	170	0	0	0	0	0	0	0	170 ( 0.3)
Illness of husband/wife	0	4	0	0	0	29	21	14	21	0	89 ( 0.2)
Other reasons	0	2	1	98	25	246	73	61	0	0	506 ( 1.0)
Not specified	0	188	0	0	0	0	0	0	0	0	188 ( 0.4)
Total	404	1300	2784	2994	9977	7692	2309	1894	1233	21224	51148 (100.0)

Figures in brackets denote percentages



TABLE 8  
Distribution of oral pill dropouts by reason for discontinuation, 1980-89

Reason	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Total
Wanting a child	19	120	187	236	599	326	188	162	255	92	2184 ( 11.5)
Temporary migration	43	168	252	300	536	232	241	181	164	65	2182 ( 11.5)
No supply	0	12	8	0	0	0	0	0	0	1931	1951 ( 10.3)
Supply from other source	0	0	0	0	0	7	46	7	0	0	60 ( 0.3)
Lack of follow-up	0	0	0	131	542	155	51	830	143	46	1898 ( 10.0)
Accepted sterilisation	10	76	236	229	462	212	271	96	104	72	1768 ( 9.3)
Changed to another method	4	105	340	390	313	115	186	79	134	104	1770 ( 9.3)
Pregnant due to irregular use	4	96	117	218	619	233	173	119	65	12	1676 ( 8.8)
Complications/side effects	48	100	135	120	165	112	64	44	144	66	998 ( 5.3)
Method dissatisfaction	0	34	30	136	316	115	116	95	195	432	1469 ( 7.7)
Introduction of social marketing	0	0	0	0	0	475	0	0	0	0	475 ( 2.5)
Objection of partner/other	5	36	81	29	19	10	9	3	119	68	379 ( 2.0)
Illness of husband/wife	13	1	0	14	57	39	26	17	33	8	208 ( 2.0)
Menopause	0	24	6	13	65	0	0	0	0	0	108 ( 0.6)
Death of acceptor/husband	2	5	2	9	20	22	11	17	22	6	116 ( 0.6)
Contraindications	3	14	0	0	0	0	0	0	0	0	7 ( )
Under medical case study	36	27	49	0	0	0	0	0	0	0	112 ( 0.6)
Fear of complications	18	34	11	0	0	0	0	0	0	0	63 ( 0.3)
Other	8	34	1	44	0	82	62	22	0	0	253 ( 1.3)
Not specified	0	1229	45	0	0	0	0	0	0	0	1274 ( 6.7)
Total	233	2115	1500	1869	3713	2135	1444	1672	1378	2902	18961 (100.6)

Figures in brackets denote percentages

TABLE 9  
Distribution of foam tablet dropouts by reason for discontinuation, 1980-89

Reason	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Total (%)
Pregnancy due to irregular use	0	0	0	16	91	41	17	16	17	7	205 (16.1)
Method dissatisfaction	0	2	30	27	55	43	4	10	0	11	182 (14.3)
Changed to another method	0	2	33	49	38	11	9	5	14	0	161 (12.6)
Lost to follow-up	0	0	0	12	97	27	6	4	7	3	156 (12.2)
Lack of supply	0	0	0	12	0	0	0	0	0	118	130 (10.2)
Accepted sterilisation	0	0	0	25	56	18	9	13	4	3	128 (10.0)
Menopause	0	0	0	0	91	0	0	0	0	0	91 (7.1)
Wanting a child	0	0	0	6	25	20	13	4	7	7	82 (6.4)
Introduction of social marketing	0	0	0	0	0	79	2	0	0	0	81 (6.4)
Complications/side effects	0	0	0	0	0	25	7	2	0	0	34 (2.7)
Divorced/separated/death of spouse	0	0	0	0	2	2	0	0	1	0	5 (0.4)
Objection of husband/others	0	0	0	3	0	3	3	0	0	0	9 (0.7)
Other	0	0	0	0	0	10	0	0	0	0	10 (0.8)
Total	0	4	63	150	455	279	70	54	50	149	1274 (100.0)

TABLE 10  
Distribution of IUD dropouts by reason for discontinuation, 1980-89

Reason	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Total (%)
Complications/Side effects	—	0	43	34	59	62	66	47	13	37	361 (37.5)
Wanting a child	—	0	0	0	29	51	44	34	22	15	195 (20.3)
Accepted sterilisation	—	0	16	14	26	28	40	19	16	11	170 (18.0)
Changed to another method	—	0	0	2	3	8	12	10	11	3	49 (5.1)
Lack of follow-up	—	0	0	0	0	1	16	0	0	36	53 (5.5)
Method dissatisfaction	—	0	0	0	3	14	33	0	0	1	51 (5.3)
Pregnancy due to method failure/expulsion	—	0	0	0	0	3	3	3	14	15	38 (4.0)
Illness of either spouse	—	0	0	0	7	3	0	0	1	12	23 (2.3)
Menopause	—	0	0	0	4	0	0	0	0	0	4 (0.4)
Other unspecified reasons	—	0	0	0	0	7	6	2	1	0	16 (1.7)
Total	—	0	59	50	131	177	220	115	78	130	960 (100.0)

method-related complications associated with its use (37.6 per cent), followed by 'changing over to another method' (22.8 per cent) and 'planning a pregnancy' (20.3 per cent).

The findings presented in Tables 8, 9 and 10 indicate that many acceptors discontinue the use of a method for various reasons, including the desire to have another child as also to adopt another possibly more acceptable method. Besides taking steps to streamline channels of supply in order to provide timely resupplies to clients, better quality of counselling combined with more frequent follow up visits is suggested to minimise discontinuation arising from reasons such as fear/experience of side effects, pregnancy resulting from irregular use, method dissatisfaction, or objection from spouse/others; these four reasons together accounted for as much as 15.5 per cent of condom discontinuance, 24.2 per cent of oral pill discontinuance, and 33.7 per cent of foam tablet discontinuance, over the ten-year period of the Project. Notably, as many as 10,472 acceptors (13 to 23 per cent of the total dropouts for these three methods) were provided timely and appropriate counselling to choose an alternative method and thereby remain protected from an unwanted pregnancy.

### **Changing Over to Another Method**

While discontinuation of the current family planning method is an inherent problem associated with the use of temporary methods of contraception, the CBD programme offered an alternative method to the user who experienced some difficulty in using the chosen method. Having known the acceptor closely, and by providing good follow-up services, the CBD holder is apparently in a position to counsel his clients and suggest another method of contraception. The acceptor thus, either on his own or based on the advice of the CBD holder, decides to try out another method.

From Tables 1 to 4 it can be observed that a considerable number of users dropping out of a method opted for another. As many as 12.8 per cent among condom discontinuers changed their mind and tried another method. If the year 1989, when more persons dropped out due to non-supply is excluded, the percentage of those changing over rises to 21.5 per cent. Likewise, 18.7 per cent of those discontinuing the oral pill and 22.7 per cent of those discontinuing the foam tablet changed over to another method. Further, even among IUD discontinuers, over a fifth - 22.8 per cent - changed over to another method.

### **Choice of Alternative Method**

According to Table 11 the first preference of condom acceptors who changed methods was sterilisation (47 per cent). However, an equally strong choice was exercised in favour of the oral pill (37.5 per cent). Interestingly,

some also opted for the IUD (13.1 per cent) or foam tablets (2.4 per cent)

TABLE 11

**Distribution of condom acceptors who switched methods by method selected, 1980-89**

Year	Number of acceptors who switched methods	Method adopted after condom discontinuation			
		Foam Tablet	Oral Pill	IUD	Sterilisation
1980	291	0	289	0	2
1981	722	3	680	8	31
1982	1011	33	448	145	385
1983	1255	50	430	119	656
1984	1137	18	300	148	671
1985	811	4	92	137	578
1986	705	8	84	121	492
1987	254	22	61	42	129
1988	248	19	70	69	90
1989	211	5	39	79	88
Total	6645	162 (2.4)	2493 (37.5)	868 (13.1)	3122 (47.0)

Table 12 reveals that women changing over from the oral pill also preferred sterilisation (50.0 per cent), followed by the condom (29.9 per cent), IUD (18.2 per cent) and foam tablets (1.9 per cent). Discontinuers of foam tablets also exhibited a similar preference for sterilisation (44.3 per cent), followed by the condom (31.3 per cent), oral pill (12.8 per cent) and IUD (11.4 per cent) as seen from Table 12.

As expected, most of those who discontinued IUD use opted for sterilisation (77.6 per cent) in the first place, with some accepting the condom (13.3 per cent) and oral pill (9.1 per cent) (Table 13)

TABLE 13

**Distribution of IUD acceptors who switched methods by method selected, 1980-89**

Year	Number of acceptors who switched methods	Method adopted after condom discontinuation			
		Condom	Foam Tablet	Oral Pill	Sterilisation
1980	—	—	—	—	—
1981	0	0	0	0	0
1982	16	0	0	0	16
1983	16	0	0	2	14
1984	29	1	0	2	26
1985	36	6	0	2	28
1986	52	6	0	6	40
1987	29	7	0	3	19
1988	27	6	0	5	16
1989	14	3	0	0	11
Total	219 (100.0)	29 (13.3)	0 (0.0)	20 (9.1)	170 (77.6)

TABLE 12  
Distribution of oral pill and foam tablet acceptors who switched methods by method selected, 1980-89

Year	Oral Pill Acceptors				Foam Tablet Acceptors					
	Number who switched methods		Method adopted after pill discontinuation		Number who switched methods		Method adopted after pill discontinuation			
			Condom	Foam Tablet			IUD	Sterilisation	Condom	Foam Tablet
1980	14	0	0	4	10	2	0	0	0	0
1981	181	80	2	23	76	33	30	3	0	0
1982	576	218	12	110	236	74	18	15	16	25
1983	619	281	25	84	229	74	18	15	16	25
1984	775	219	12	82	462	94	21	11	6	56
1985	327	45	4	66	212	29	6	2	3	18
1986	457	68	13	105	271	18	6	2	1	9
1987	175	42	0	37	96	18	3	0	2	13
1988	238	61	0	73	104	18	5	4	5	4
1989	176	43	0	61	72	3	0	0	0	3
Total	3538 (100.0)	1057 (29.9)	68 (1.9)	645 (18.2)	1768 (50.0)	289 (100.0)	91 (31.5)	37 (12.8)	33 (11.4)	128 (44.3)

Figures in brackets denote percentages.

### Pattern of Method Shifting

An analysis of the pattern of switching methods (Table 14) indicates that each method suffered a loss due to discontinuation but also gained to some extent by virtue of method-switching.

TABLE 14  
Family planning acceptors and their pattern of changing methods, 1980-89

Year	Type of family planning method and change								
	Condom		Oral pill		Foam tablet		IUD		To Sterilisation*
	From	To	From	To	From	To	From	To	
1980	291	0	14	289	0	0	0	4	12
1981	722	82	181	680	2	5	0	31	107
1982	1011	248	576	451	33	45	16	255	637
1983	1255	299	619	447	74	75	16	219	924
1984	1137	241	775	313	94	30	29	236	1215
1985	811	57	327	96	29	8	36	206	836
1986	705	80	457	92	18	21	52	227	812
1987	254	52	175	64	18	22	29	81	257
1988	248	72	238	79	18	19	27	147	214
1989	211	46	176	39	3	5	14	140	174
Total	6645	1177	3538	2550	271	230	219	1546	5188
Regain to method	17.7%		72.1%		84.9%		70.9%		

\* Figures include only those who changed over to sterilisation after using another family planning method

As compared to the loss the regain in the case of the condom had been 17.7 per cent as against 72.1 per cent in case of oral pill. Though numerically not a large group, the regain of 84.9 per cent in the case of foam tablets is noteworthy. The overall picture for all the three contraceptives taken together indicated a regain of 39.7 per cent. In other words the CBD programme helped sustain contraception and helped the to and fro movement by ensuring a free choice as well as availability of methods among the family planning acceptors.

### Programme Impact

The contribution of the CBD programme in relation to the ongoing government programme is presented in Table 15.

The CBD programme within the Project area covering eight Community Development Blocks during the calendar year 1989 contributed as much as 56.3 per cent of the total performance in these Blocks. As expected, government workers were responsible for 86 per cent of the sterilisation perfor-

TABLE 15

**Contribution of the CBD approach and methodwise performance in CBD and control areas during January—December 1989**

FP Method	Project Area (8 Blocks)				Control Area (14 Blocks)	
	% contribution by CBD	% contribution by PHC	Total new acceptors CBD+PHC	Average new acceptors per Block	Total new acceptors per Block	Average new acceptors per Block
Vasectomy	0.9	99.1	898	112	494	35
Tubectomy	19.6	80.4	2,272	284	1,875	134
IUD	12.5	87.5	7,700	963	10,841	775
Oral pill*	86.2	13.8	5,974	747	1,122	80
Condom*	69.9	30.1	20,137	2,517	7,215	515
Foam tablet*	100.0	—	411	51	—	—
<b>Total</b>	<b>56.3</b>	<b>43.7</b>	<b>37,392</b>	<b>4,674</b>	<b>21,547</b>	<b>1,539</b>
Contribution to CPR during 1989	9.44	7.33	16.77	—	5.93	—
CPR at the end of 1989	17.25	37.15	54.44	—	NA	—

\* Equivalent users

NA = Not available

CPR = Contraceptive prevalence rate

mance and 87.5 per cent of the IUD performance during this period. However, the reverse was true of other contraceptives wherein the CBD Project contributed to the tune of 74.1 per cent of the equivalent users. The CBD programme helped to add 9.44 per cent to the couple protection rate in the eight Blocks during 1989 as compared to the contribution of 7.33 per cent from government efforts alone in the control Blocks.

When compared to the control area consisting of the neighbouring 14 Community Development Blocks within Varanasi District, the performance in the CBD Project areas showed a higher level of family planning performance. While each Block in the Project area recruited 4674 new acceptors on average in 1989, a corresponding figure of 1539 new acceptors was recorded per Block in the control area. Further, the average number of new acceptors for each method recruited per Block in 1989 in the Project area, which is a result of the complementary efforts of the government staff as well as the CBD, was higher as compared to that recruited per Block in the control area where only the government staff worked. Consequently, the average

achievement of couple protection rate during 1989, in the Project area (2.1 per cent) was higher than that in the control area (0.4 per cent). A higher level of acceptance of temporary methods which is likely to cover more younger couples was observed in the Project area (70.9 per cent) than in the control area (38.7 per cent), which is in line with the Project objective.

The total efforts resulted in an estimated couple protection rate of 54.44 per cent in the Project area; of this, the input from the CBD programme was 17.25 per cent

### Conclusion

A review of the FPAI Varanasi CBD Project spread over a span of ten years showed a positive influence of the community-based distribution approach on the choice of contraceptives adopted by its clients. The programme offers the user sufficient scope for exercising method choice and helps both men and women to decide whether to discontinue a method in order to fulfil their desire to have a child, or because they are dissatisfied with it, or in order to try out another method. The data also suggest that the programme substantially contributes to an increase in the couple protection rate by supplementing the efforts of the government staff engaged in the provision of family planning services and tends to extend contraceptive services to younger couples who are in need of temporary methods. The CBD approach contributed to nearly one-third of the total acceptors and helped sustain contraceptive use.

In conclusion, the CBD programme which is concerned with user perspectives enhances the opportunities available to the user to choose the contraceptive that he or she likes most as also to stay in the programme by changing the method if so desired. Moreover, it helps the acceptor to change over to a permanent method as and when the need arises.

### ACKNOWLEDGEMENTS

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## **BOOK REVIEW**

**Title:** *Population Planning in India: Policy Issues and Research Priorities*

**Editors:** Ashish Bose and P.B. Desai

**Publishers:** B.R. Publishing Corporation, Delhi.

**Year of publication:** 1989

**Pages:** xxii + 200

**Price:** Rs. 170

This book, edited by two eminent Indian demographers, brings together the papers presented at a workshop on "New Issues in Population Research for Planning and Policy Making" held in New Delhi in 1988. The papers are short, in the nature of summary statements based on experience rather than on detailed analyses. There is an overview by Bose of the 46 papers which have been grouped under: new issues; data utilisation; teaching, training and research; data base; population projections and fertility and family planning.

It has to be noted at the outset that the book is not concerned with population planning in the conventional sense of fertility and mortality control, shifting age composition and population distribution, urbanisation and other aspects of future population trends and stabilisation. Rather, it takes stock of the current database and utilisation; teaching, training and research needs; and the structural and institutional changes required to optimise the returns from the investment in population research. Brief comments are made below on selected aspects to be discussed later in connection with future research directions.

Looking at the evolution of international concerns with population research, Chasteland observes a shift from the traditional topics of demography to more pressing issues; socio-economic development, the environment and population; the role and status of women; and development and population policies. However, most of the research articles are still centred on fertility, 80 per cent of the output comes from developed countries and about half of the 225 research centres are located in 42 developed countries. In view of the limited resources available, he emphasises the need to choose research relevant to country problems while maintaining the academic freedom to contribute to theoretical advances. A balance between these conflicting demands is not easy to achieve.

P.B. Desai pleads for research on the family as a social institution. The study of social institutions is a neglected topic and nuptiality and status of women, for instance, get little attention in these papers. The background of

most demographers in statistics and demography, their lack of disciplinary interest in social sciences, poor utilisation of research findings and uncoordinated research activities are some of the other issues raised.

More intensive utilisation of existing demographic data in planning is recommended with appropriate mechanisms for channeling research proposals, a centralised population information system and greater use of computers for data storage and analysis.

Several improvements are suggested in the present set-up for teaching, training and research in demography and population education in universities, population research centres and national institutes.

There are 16 papers on the demographic database. As many data systems have sprung up in India over the past 40 years to meet the voracious information demanded by centralised planning and policy making. The suggested improvements in the civil registration system and the sample registration system notwithstanding, information gathering and use is essentially a social product. It is curious to note that none of these papers consider the quality of data and the extent of their utilisation in planning and policy. When the health and family planning network is unable to maintain, for all villages, a simple register of couples eligible for family planning services, it is unrealistic to expect that villagers will, in compliance with statutory requirements, obtain birth and death certificates, for which they may not have any personal need.

In the tradition of the classical economists' concern for labour as a factor of production, Ghosh introduces in his model a logistic function for population size varying with per capita income. Such a function assumes that there is automatic population stabilisation in the long run. Nor does a stripped down model provide details of age composition, population distribution, etc., that are essential for short term planning. Mukerji suggests a new method of projection of population components based on past trends, when projections for the totals are available. It is similar to the "difference elimination" method which is now widely used in the projection of the urban and other components of the population. Yadava's urbanisation model projects 27.79 per cent urban population in 2001 against the Registrar General's projection of about 34 per cent. The model, in fact, does not fit even the 1981 census figure of 23.70 per cent urbanisation. These models and methods have, therefore, to be critically examined before adding them to our stock of knowledge.

Another set of five papers are devoted to fertility and family planning. Some of these cover now familiar grounds. Statistical findings have to be appropriately explained in terms of relevant behavioural parameters. It is well recognised that though the average age at acceptance of tubectomy by women is less than the average age of vasectomy acceptors' wives, tubectomy acceptors have a larger mean number of living children. Natarajan.

in his paper, ventures the explanation that either vasectomy acceptors report a higher age for their wives or the ages of tubectomy acceptors are under-reported. This apparent contradiction may, however, be explained in terms of contraceptive methods and behaviour. Tubectomy is not performed on a pregnant women, many cases of tubectomy are post-partum operations, vasectomy acceptors are less conservative in outlook and may be selected for such factors as urban residence and wife's education which tend to depress the family size.

The final paper by Bose is targeted on setting family planning targets. He introduces the concept of sustainable targets. I sympathise with his concern for improving the programme while maintaining the dignity and status of women. However, I doubt that it is feasible for women's organisations to take up the challenge of delivering family planning services immediately in the whole of rural India. It would be more prudent for voluntary agencies, which are mostly urban-based, to expand family planning and health related activities in the urban fringe and urban slums, in which 15 to 20 per cent of India's population will be residing by the year 2001.

What are the major criteria for improving and restructuring population data collection, research and teaching that emerge from this workshop? "Measurement began our might", says Yeats. Demographic measurement, like all social measurement, is complex and has to improve by a cumulative process of trial and error. There should be serious concern about the quality of data because planning, evaluation or theory can be sound only if based on well established facts. Information is a social product. Its production and use depend on a rational outlook not only on the part of planners and administrators but also on the part of the individual respondents who have to adapt their behaviour to changing circumstances.

It is necessary to learn from past experience with large data systems like the Census, Sample Registration System, Civil Registration and the National Sample Survey regarding the problems of data collection from respondents who are, mostly illiterate, forgetful and attach little importance to the facts asked for. In a resource scarce country, it will prove expensive to ignore such experience in setting up new data systems.

Centralised data collection, though essential for setting broad policies, is subject to many pitfalls. The quality of data may be poor and utilisation may not be optimal. Implementation of decentralised programmes requires the collection of operational data, on eligible couples, identification of programme beneficiaries, etc. at the local level. In the long run, comprehensive improvement in civil registration is possible only if the birth and death certificates are of social and juridical use to most individuals.

Research findings have to be critically examined from the points of view of the method, the quality of data and the conclusions reached in relation

to other similar studies before they are admitted to the cumulative body of knowledge. Failure to observe these norms will not only throw doubt on the particular findings but also discredit social science research as ambiguous at best and contradictory or irrelevant at worst. For obtaining the largest returns on the investment in population research, coordination of such research, critical examination of the findings and sharing of the results among concerned social scientists, planners and policy makers are essential.

In this country most of the funding for population research comes from the government. The family planning programme, though an important intervention, is only one aspect of population policy and action. There is the danger in bureaucratic control of funding that it may tend to equate population research with the official family planning programme, especially its operational aspects. Research in population should be broad based, extending beyond family planning and fertility control to other emerging issues like urbanisation, human resource development and social welfare. It should be free to explore all aspects of population policy and to study in depth changes in individual behaviour, and in nuptiality, family and other social institutions. Otherwise important policy choices may be overlooked. A narrow vision of population research may even result in the failure of the family planning programme, however effectively pursued.

In restructuring population data systems, and research and teaching in this country, these issues, painstakingly gathered from past experience, cannot be lost sight of.

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# **HOW DELAYING MARRIAGE AND SPACING BIRTHS CONTRIBUTES TO POPULATION CONTROL: AN EXPLANATION WITH ILLUSTRATIONS**

**MS. T. RAJARETNAM\***

## **INTRODUCTION**

Most people in India are now aware that the country's population is growing rapidly, and appreciate the need for controlling its rate of growth. The national family planning programme which was initiated primarily to reduce the high fertility and population growth rates in the country has failed to achieve this, a major reason for this being the undue importance given to sterilisation which has proved to be ineffective in reducing family size. In this context, it is important to know as to what other factors can slow down the high rate of growth of population so that efforts can be made to manipulate such factors in order to check it.

India's population grew at an annual rate of only 0.56 per cent during 1901-11, by 1.26 per cent during 1941-51, and 2.24 per cent during 1961-71. However, it remained at 2.28 per cent during 1971-81<sup>1</sup>. On the other hand, the death rate declined substantially - from an estimated 42.6 per thousand population during 1901-1911 to 15.0 during 1971-81. The birth rate for the corresponding periods was 49.2 and 37.2 respectively<sup>1</sup>. The difference between the birth and the death rates worked out to 6.6 points for 1901-11, and 22.2 points for 1971-81. Fertility then is the major factor contributing to the high growth rate.

The basic factors which determine population growth are: (i) the number of children each woman (or couple) in the population bears during her childbearing years, and (ii) the ages at which the woman has given birth to these children. While the former relationship is obvious, the latter (that is, timing or birth spacing), means that for the same number of children born per woman, mothers who give birth during their later years contribute more towards population control than those who give birth to their children early in life. In fact, the relationship has been discussed from time to time<sup>2,4</sup>, but its significance lies in the fact that it takes into account the family size of couples which is crucial for a country like India.

Late childbearing can be achieved by effecting late marriages of girls and observing longer intervals between births. Late marriages of girls not only delay the occurrence of the first and subsequent births but also contribute to a reduction in the ultimate family size<sup>5,7</sup>. Though it can be said that the prevalence of adolescent sub-fecundity is greater among early

marriers than among late marriers, its net effect in delaying the birth of the first child is found to be much lower than that due to the marriage itself<sup>8,9</sup>. For example, even if it is assumed that the first birth interval of a woman who marries at age 15 is three years and that of a woman who marries at age 17 is two years, still in terms of age at birth, the child is born at age 18 in the former case and only at age 19 in the latter case. However, some studies (see for example, Jain<sup>10</sup>) have found a relatively higher incidence of childlessness among early marriers as compared to late marriers, though the World Fertility Survey<sup>11</sup> and many other studies (example, Rajaretnam<sup>5</sup>) have not found any such relationship. As far as late marriage is concerned, though late marriers exhibit a 'catching-up effect' on the number of children, the age at birth of these children would almost always be higher than that of early marriers ( see for example, Rajaretnam<sup>5</sup>). With regard to longer intervals between births, the continued use of temporary methods of contraception, prolonged periods of breastfeeding (to effect longer periods of post-partum amenorrhoea), induced abortion (so that the next child is born relatively late) and abstinence are some of the major factors. However, in practice, at least in the Indian context, most of these factors operate only after a few births.

### **The Illustration**

The illustration given below explains in a non-technical way as to how and to what extent delaying of marriage and or spacing of births affects population growth within the context of the ultimate achievement of the same number of children by all women. This example is more appropriate for India where couples consider a minimum of three or four children as essential<sup>12</sup>.

Let us consider a hypothetical population in which each woman bears four children during her childbearing years; the first and the third being female and the remaining two, male. Let one group of these women be assumed to have married at age 17 and the other at age 20. Let us further divide these two groups of women into two sets each based on two fertility (birth interval) schedules - (i) the first schedule with a birth interval of two years between marriage and the first childbirth and three years each between the first and second births, second and third births, and third and fourth births). The second schedule will have birth intervals of three years and five years respectively. Since couples in India usually desire to have the first child as early as possible after marriage, the first birth interval is taken as two and three years as against three and five years for the subsequent births, in the first and second fertility schedules, respectively. It is to be noted that the assumptions made in respect of age at marriage, number of children per woman and birth intervals are more or less in line with the existing situation in India. It may further be assumed that each person, male or female, lives for 55 years, the life expectancy obtained for India for the recent period<sup>1</sup>.

Based on the two age-at-marriage patterns and the two fertility schedules, the timing of births (or age of mother at births) obtained for the four hypothetical groups is presented in Table 1.

TABLE 1

## Fertility schedule for the hypothetical groups

Marriage/ Birth order	Sex of child	Group 1		Group 2		Group 3		Group 4	
		B I	Age	B I	Age	B I	Age	B I	Age
Marriage	—	—	17	—	17	—	20	—	20
1st child	F	2	19	3	20	2	22	3	23
2nd child	M	3	22	5	25	3	25	5	28
3rd child	F	3	25	5	30	3	28	5	33
4th child	M	3	28	5	35	3	31	5	38

B I = Birth interval Age = Age of mother at marriage/child birth F = Female, M = Male

It is clear from Table 1 that the number of children born per woman and their sex order are the same in all the four groups. The only difference between the groups is the age of mother at the time of birth of these children.

It is interesting to attempt a life cycle analysis for each of these four groups by taking one female (and correspondingly, one male - to mean a couple) per group. Let these females be assumed to have been born in an initial year, say, zero. During the life cycle process, persons grow, marry, females bear children as per schedule, and pass away by age 55. Children born to these persons repeat this process of procreation. As we have considered four children (two male and two female) per woman, we can safely assume that one male and one female are equal to a couple. The life cycle process is depicted in detail in Figures 1 to 4.

### The Life Cycle Charts

In the life cycle charts, the first horizontal line drawn just above the horizontal axis represents the first woman born in year zero. The corresponding male is not shown as it makes no difference. At the extreme left, the four vertical lines drawn from the bottom horizontal line represent the children born to this woman as per the given fertility schedule. The horizontal lines drawn from the top of these vertical lines represent the children's length of life, or life upto year 100. Among these, two correspond to females. The four vertical lines drawn from each of these two horizontal lines represent the children born to them as per the fertility schedule. The horizontal lines drawn from the top of these vertical lines represent the children's length of life, or life upto year 100, and so on. The dotted portion in the vertical lines simply means that more than one woman had given birth in that year, and one birth is differentiated from another by using the dots. The horizontal

FIGURE 1  
Life Cycle Chart-1

I Fertility Schedule			
Birth Order	Sex	Int*	Age
Marriage	—	—	17
First	F	2	19
Second	M	3	22
Third	F	3	25
Fourth	M	3	28

\* Int = Birth interval in years

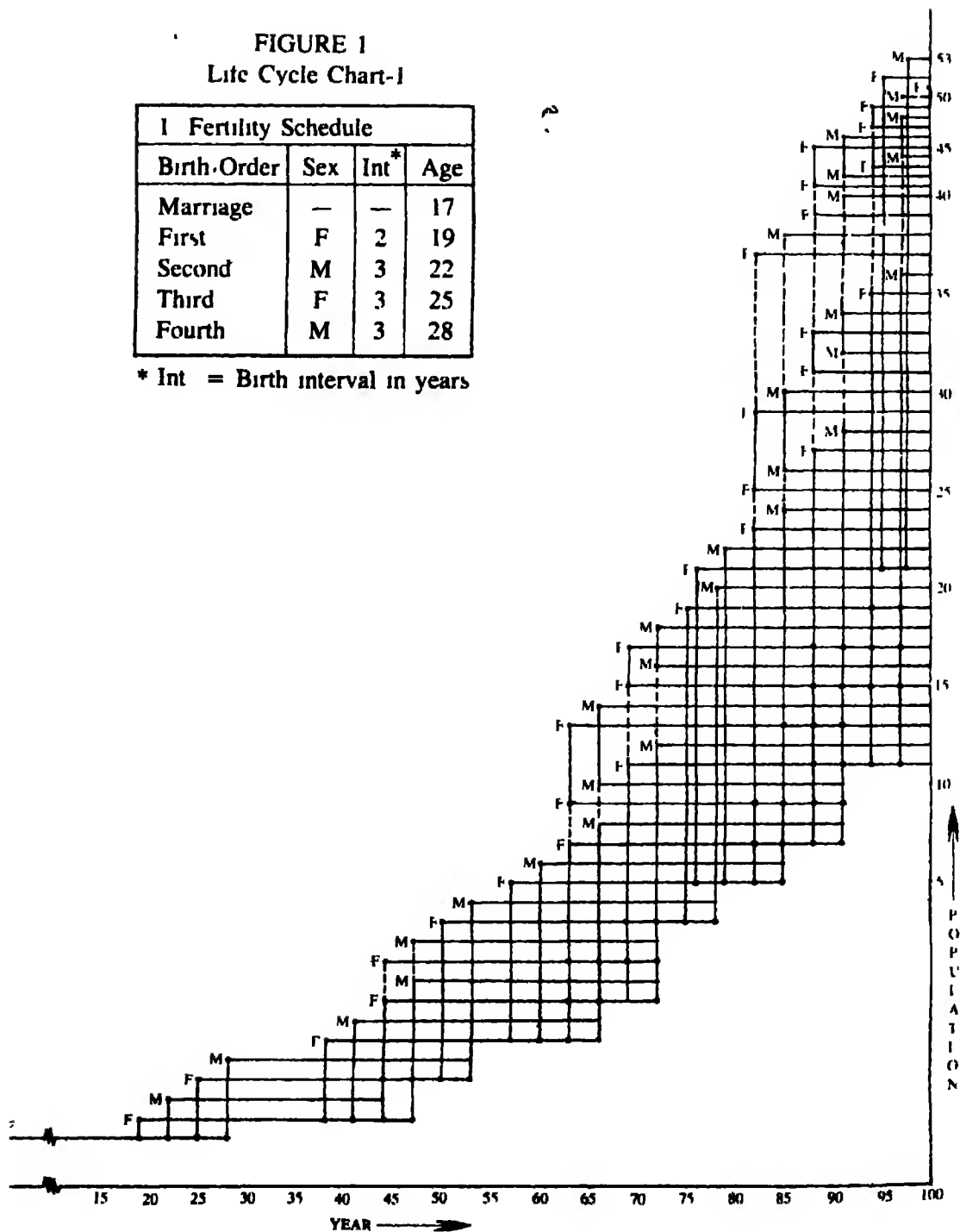
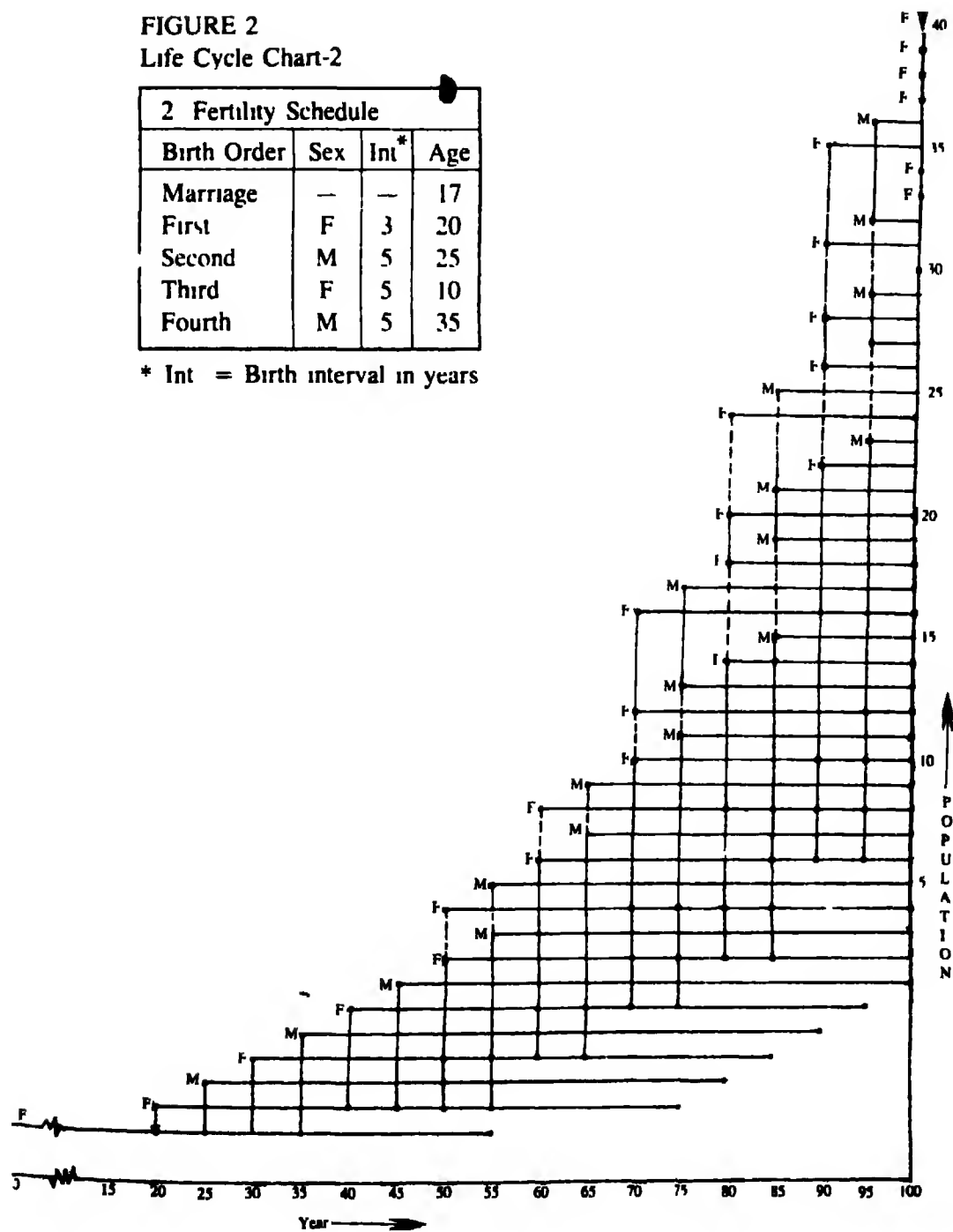


FIGURE 2  
Life Cycle Chart-2

2 Fertility Schedule			
Birth Order	Sex	Int*	Age
Marriage	—	—	17
First	F	3	20
Second	M	5	25
Third	F	5	30
Fourth	M	5	35

\* Int = Birth interval in years





lines which meet the vertical line at the extreme right (drawn corresponding to year 100) represent the persons living at that point of time, as a result of the lone female (and a male) born in the initial years zero, and she, her children, grand children and so on are subjected to the given schedule of marriage, fertility and mortality.

The figures show that approximately the first one-fifth of the exercise period effected no fertility experience, and the next one-third period no mortality experience. Thus, the effective exercise period is only about 50 years. Hence, for a good mix of experiences (of marriage, fertility and mortality) among people and to determine more specifically the rate of population growth, a longer projection period is required which is complex and beyond the scope of this exercise, though such an exercise will be more revealing. Table 2 gives the number of surviving persons (or population strength) in each group at year 100, as obtained from Figures 1 to 4.

TABLE 2

## Population strength at the end of 100 years by group

Group	Age at marriage (years)	Fertility schedule (birth interval in years)	Population at year 100
	17	2, 3, 3, 3	53
	17	3, 5, 5, 5	40
	20	2, 3, 3, 3	39
	20	3, 5, 5, 5	25

**Effect of delaying of marriage and spacing of births on population growth**

It can be seen from Table 2 that even though the number of children born per woman is the same (4 children per woman) in all the four groups, there are large differences in the strength of the population between the groups in the long run due to the delay in the occurrence of births.

A shift in age at marriage from 17 to 20 (a 3-year delay) resulted in a decline of 14 persons (from 53 to 39) for birth intervals of 2,3,3,3 years between the four successive births, and 15 persons (from 40 to 25) for birth intervals of 3,5,5,5 years, at the end of 100 years. This worked out to a population decline of 26.4 per cent and 37.5 per cent respectively. This clearly shows that, other things being equal, a small delay in the age at marriage has a significant effect in reducing population growth.

Similarly, an increase in birth intervals from 2,3,3,3 years to 3,5,5,5 years (a total delay of 7 years for all the four births combined) produced a decline of 13 persons (from 53 to 40) when age at marriage was 17 years, and 14 persons (from 39 to 25) when it was 20 years. This worked out to a population decline of 24.5 per cent and 35.9 per cent respectively. This

FIGURE 3  
 Life Cycle Chart-3

3 Fertility Schedule			
Birth Order	Sex	Int*	Age
Marriage	—	—	20
First	F	2	22
Second	M	3	25
Third	F	3	28
Fourth	M	3	32

\* Int = Birth interval in year

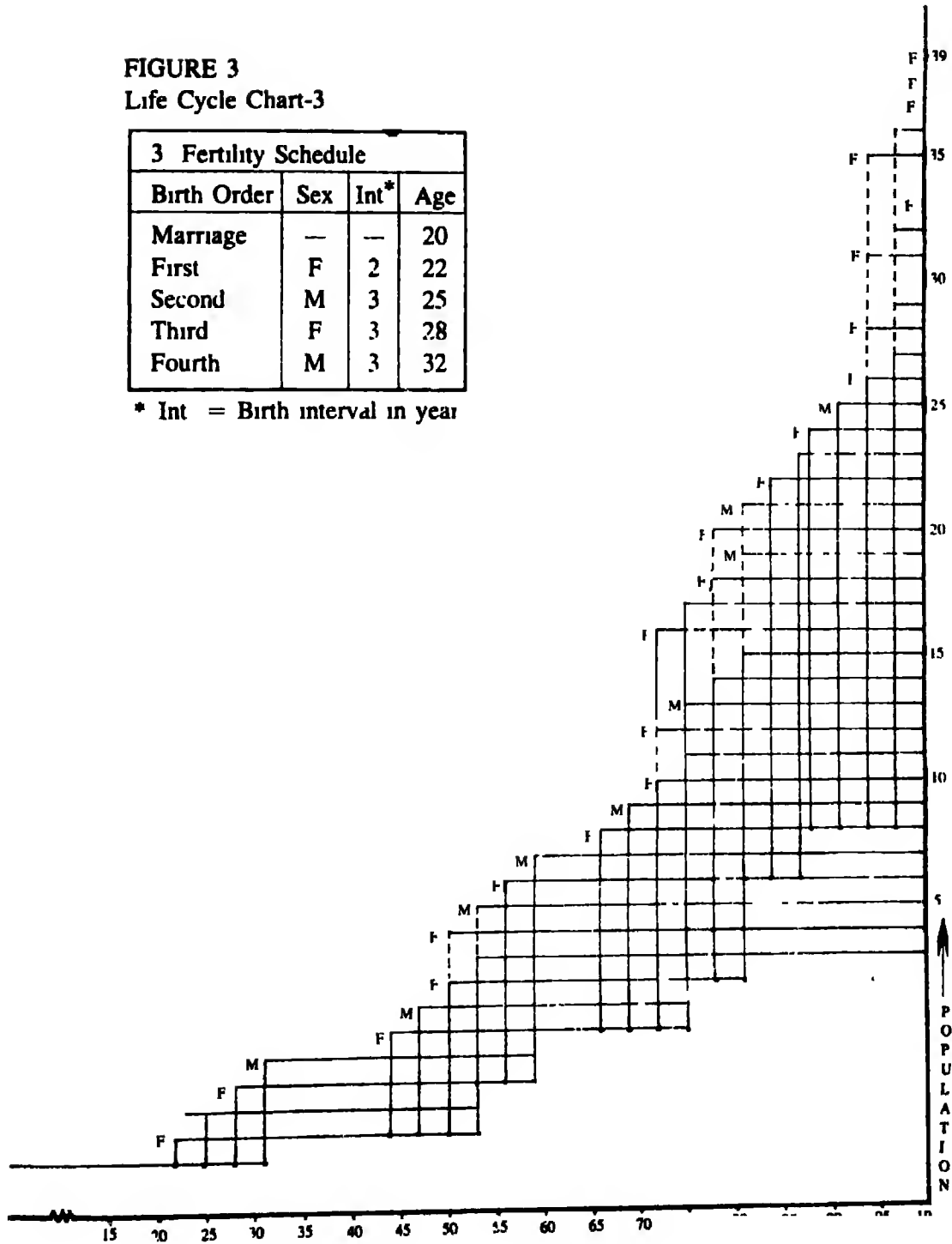
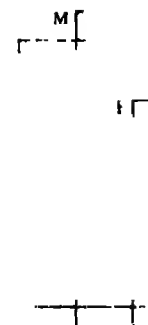


FIGURE 4  
Life Cycle Chart-4

3 Fertility Schedule			
Birth Order	Sex	Int*	Age
Marriage	—	--	20
First	F	3	23
Second	M	5	28
Third	F	5	33
Fourth	M	5	28

Int = Birth interval in years

4)



15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100  
YEAR

clearly demonstrates that a longer interval between births, even if there is no reduction in the ultimate family size, contributes substantially to population control.

Further, a combination of 3-year delay of marriage (from age 17 to 20) and an additional interval of 1,2,2,2 years (a total of 7 years) resulted in a reduction of 28 persons (from 53 to 25), or 53 per cent in the population at the end of 100 years.

The relative importance of delaying marriage and of birth spacing on population control indicates that a delay of three years in age at marriage from 17 to 20 is equal to or better than a total additional delay of seven years in successive birth intervals from 2,3,3,3 years to 3,5,5,5 years. For, the number of persons at the end of 100 years declines to 39 in the former case, and to 40 in the latter case. This is due to the fact that 'late marriage' delays the first as well as the subsequent births considerably whereas spacing delays only the later births substantially.

### **Some Indirect Inferences**

An important indirect inference that can be drawn from this exercise relates to the impact of sterilisation on the birth control programme. Let us consider Groups 1 and 2. It can be seen from Table 1 that in Group 1 the fourth child is born at age 28 whereas in Group 2, it is born at age 35. This shows that the women in Group 1 are still young at the time of their fourth childbirth. Let us assume that they all accepted sterilisation. At the same time, the women in Group 2 are already aged 35 at the time of their fourth childbirth and hence may not require sterilisation, or, let us assume that they also accepted sterilisation. In that case, even though the women in Group 1 accepted sterilisation much earlier, their contribution to the population control programme will be much lower than that of the women in Group 2. This can be seen from Table 2 where the population strength at the end of the 100th year is much higher for Group 1 (53 persons) than for Group 2 (39 persons). In other words, even if the women in Group 2 did not accept sterilisation, the women in Group 1 are no better than those in Group 2 in respect of their contribution to curbing population growth. The same explanation holds good for Groups 3 and 4 as well.

The exercise further indicates that delaying marriage and spacing births also helps women to limit their family size. For example, in the same groups, the women in Group 1 are just 28 years old at the time of their fourth childbirth whereas in Group 2, they are 35. In reality, women in Group 1 are more likely to have a few more children than women in Group 2, because when the fourth child is born, further childbearing of the latter women is limited both physiologically and behaviourally by virtue of their age.

## CONCLUSION

The exercise has clearly demonstrated that population control is not merely determined by 'family size' or the number of children born to women, but is influenced much more by the timing of births. Irrespective of the number of children produced, the timing of births has an independent impact on population control. That is, delaying marriage and/or spacing births, even if the process is gradual, will produce a considerable impact on population growth; because late-born children are late to grow, late to marry and late to reproduce, and this 'late' process will continue endlessly, generation after generation. Further, delaying the marriage of girls and spacing births also means ensuring better health of mothers and children<sup>11</sup>. Hence, policies and programmes that encourage the postponement of marriage especially of girls, and spacing between births through temporary methods of family planning, prolonged breastfeeding, and practice of induced abortion (as allowed by law) in India will amount to a large-scale reduction of the high population growth rate besides contributing to the health of mothers and children.

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## **A NEW STRATEGY FOR FAMILY WELFARE IN THE CORPORATE SECTOR+**

**DR. (MRS.) NINA PURI\***

I am grateful for being asked to speak on the subject of "New Strategy for Family Welfare Programmes". My airing and sharing of views coming towards the close of a very instructive, and hopefully productive 'convention', is like holding a candle to a thousand light bulbs, but I guess in days of frequent power failure, support systems such as ours, namely the Family Planning Association of India have amply justified their existence for the last four decades. Hence, here I am trying to suggest a strategy for a message that essentially remains the same, of enhancing the quality of life of an individual, his family, a group or community and ultimately the whole country, through family welfare.

Alarm bells begin to ring even after a cursory glance at the newspapers, magazines and data reeled out by international monitoring and evaluating agencies, which caution us about the rapid rate of population growth outstripping socio-economic development.

On the national front, government bodies, non-governmental organisations such as yours and voluntary associations such as ours are well-seized of the problem. The adage "development is the best contraceptive" is eluding us as time passes by. Whilst talking to individuals the sentiments again echoed are - indeed we are making a lot of progress on the economic front, but population is fast eating into the developmental cake.

Coming however, to the nitty-gritty of problem solving, the picture becomes rather blurred and apologetic - foreign funding is on occasion suspect, and donors on occasion have their own apprehensions. In fact, in the maze of bureaucratic dialogue there is a population explosion of words rather than of action. Coming closer to home, almost all political parties in their manifestos echo the need for population control, but here we are at a loss for words when it comes to support from public pulpits trumpeting grandiose oratory. Individuals when asked to help in doing something about it, promptly react - Oh! but do something first about those communities and minorities engaged in multiplying their numbers!

+ Presented at the National Convention on the Corporate Sector and Family Welfare Programme in India, sponsored by the Council of Indian Employers Enterprise Program (USAID)/LAPTAP (ILO), 6-7 April 1990, New Delhi.

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Tackling a sensitive issue, no doubt is not an easy task, but, I think ample proof has been put forward through the course of these deliberations, and the very useful publications brought out by the Council of Indian Employers that difficulties and obstacles can be surmounted effectively.

What are these difficulties and obstacles we face? Today, we have come to that point or plateau in our family welfare programme where we cannot thrust a single standardised strategy on to a varied complexion of society. We cannot put all our family planning eggs in the sterilisation basket - i.e. terminal methods - vasectomy and tubectomy. If for a moment I might be allowed to wear another hat, representing industry, I would make a statement of fact, that by and large, industrialists wanting to associate in this area of work, centre their strategy only towards sterilisation - a notion that has to be dispelled. In fact, wider areas of interaction with their staff, employees and their families must be incorporated in their programme planning. It is conceded that a family planning and welfare programme is needed, the programme is tested, the programme is necessary, but, the time has come to shift the family planning programme out of the rut of diminishing effectiveness. Recently the Population Crisis Committee reported, "India has failed to achieve its goal of a small family norm, despite a hefty financial allocation, and three decades of subsidised family planning programmes". They advocate major new initiatives to wash away the labels of a lackluster programme, no political will, ineffective implementation, and absence of popular support. The Report states, "it is mankind's last opportunity to prevent the doubling or tripling of world population by the year 2000 through access to affordable contraception".

Indeed the time has come to enthuse the spirit of enterprise, corporate enterprise, into concrete action in order to revitalise programmes in family welfare. People want services, not harping on polemics, people want the right to correct information; people want successful recipes in population policy; and people want clinical and social facilities to be institutionalised for those who want fewer children, and for those who do not have any.

Even within the confines of the organised sector catering to over 25 million workers and their families, the question is to identify the content as to what, when, how and to whom should the multi-pronged programme reach through sustained and sincere implementation. Although sterilisation has to continue in our country context it is equally important to reflect within demographic parameters, emphasise on spacing methods, education, non-formal and informal, and reform our socio-cultural traditions for attitudinal change. Family planning is a tool not to constrain life but to enrich it.

Out of the total work force, 80 per cent of the employees are in the reproductive age group. They are young and we cannot make them the butt of sterilisation, but, we can certainly educate them on spacing methods.



No longer can we wait for future affluence to solve our problems, with the number of young people increasing (approximately 60 per cent of India's population is below 24 years) - contributing to malnutrition, added burdens on schooling, housing, employment, and exodus towards larger cities. Today, with over 160 million people in urban areas, in another 40 years it is estimated to be a back-breaking 660 million. Already we find the heart and lungs of urban conglomerates stifled with people and choked with pollution. China and Thailand have set an example and model in this region by cutting population growth by half in a matter of years. India is overtaxing her natural support systems, relentlessly exploiting the earth for raising the standard of living, and thus resulting in environmental degradation. The sooner steps are taken, even if preliminary, to bridge the vast gap between the large powerless subsistent and the small affluent India, the sooner will we edge towards a sustainable society.

Indeed the master key to opening all these locks is active involvement in family welfare programmes, and let us see why.

Family planning today is considered a basic human right which involves fertility regulation; medical and non-medical techniques, which include contraception, abortion, sterilisation and even infertility diagnosis. But today the scope has been widened in India, realising that family planning cannot be isolated from other larger programme of family welfare. This then encompasses the welfare of the whole family, looking after the health of children, mothers and old persons, nutrition, immunisation, living conditions and other allied problems of the family.

It is these programmes which need to be incorporated and linked everywhere and by everyone into the mainstream of developmental planning. Herein lies the importance of the organised sector in not only adding a new dimension, but, in acting as an effective instrument of change in India's demographic scenario. Industries have a major catalytic role to play in reducing population growth, thus increasing quality not only of their products but of the lives of their workers. More than 20 years ago, President Lyndon Johnson of the United States argued that \$5 spent on family planning was as effective a way of promoting development as \$100 in increasing production, and that ratio still holds. A very recent article in the 'Economist' reiterates this when stating - "within the third world, countries that are good at organising their finances and their industries, tend to be good at contraception too, they will get richer while the badly organised continue to get babies".

Although the NGO picture is a mixed one, there are enough enlightened industrialists concerned with population matters and on them lies the onus of translating their concern on to a much wider corporate map.

It has been more than substantiated that unless one gets support on such a sensitive subject from the community for which the services are being

designed, the programmes do not really make a dent. Therefore, one has to identify peer leadership among youth, women, and elder statesmen in a group and train them before injecting a top heavy programme. In a nutshell, one has to crack open crevices for family planning activities through indirect methods.

This brings me to the subject of maternity and child health. We can boast of being perhaps the 10th greatest industrial power in the world but we certainly cannot boast about being only three places from the bottom in health care. Over 80 per cent of Indians live in urban or rural 'jhaumpris' (huts)—'kuccha' or 'pucca' with more than 30 per cent living below subsistence levels. It is here that the newly born and young children struggle for survival, and of those who do survive, so many come to a grinding halt in their moral, mental and physical health.

Indeed the health of a nation can be gauged by the face of its children. All of us gathered here, I am sure, recognise that in India, most of these faces need transformation, for robust health and well-being, not through cosmetic doctoring, but, through basic inputs in health, hygiene and nutrition. I ask you where lies the justification for letting approximately 100 babies out of 1000 die in India. If we make a global comparison with the developed world a chill runs down one's spine. Thirty per cent of the children born in developing nations do not cross age 5 because of malnutrition and related maladies, 75 per cent have little access to regular health care, and for 60 per cent clean drinking water is a luxury. Simple low cost interventions through health education on growth monitoring, oral rehydration, breast feeding, and immunisation can save the lives of 20,000 children daily. The question is of proper implementation. For improving child survival and the health of mothers today we do not have to sink in millions of rupees, we only have to straighten out our priorities.

Today, planned parenthood is a key factor in promoting child survival. We sometimes tend to forget to address ourselves to the maternity part of what we call MCH. Every 6 minutes we lose a mother in India, with hundred thousand dying due to maternal morbidity every year. More women die in child birth annually in India than in a whole year in Europe. Wider acceptance of family planning methods and availability of safe abortion services would prevent at least half these maternal deaths (death due to septic abortions - 5 to 6 million abortions take place in India annually), as also reduce unwanted pregnancies. Dr. Fred Sai speaks of a 'silent carnage', where half a million women die of pregnancy related causes. Hence the strategy of focussing on areas concerned with the well-being of mother and child through family planning is gaining more and more credibility. Today, we have no hesitation in saying that "family planning actually saves lives", and improves the health of children and undernourished women 'who are literally milking the

flesh of their bodies for their children'. Thus, through family planning we break the vicious circle which is created by high morbidity, mortality of infants and young children, and high fertility. Women today constitute half the world's population, perform two-third of its work and receive one-tenth of its income, indeed if one reflects upon the Population Crisis Committee chart on the status of women, they are 'poor, powerless and pregnant'.

This brings me to another area of strategy formulation to be considered and that is male support for family planning and MCH. It is somewhat naive for us to keep directing family planning at a group that normally does not have the last word in these matters, even if it is most affected by the decision. Here I do not mean just counselling a gentleman to go in for a vasectomy but arranging counselling sessions with men to better understand their women and the process of procreation. Most clinics set up by government do not have hours convenient for the men to attend, perhaps male clinics for family planning and counselling could be arranged at hours convenient to them, where one can become a little more conversant with the individual psyche rather than harp on generalities. The comment made by President Habib Bourguiba of Tunisia, 'lots of children are a proof of manhood - that is not manhood but rabbithood' needs highlighting.

The red triangle has become a familiar sign now. Having created general awareness, we have to move on to the younger generation, unmarried ones who want to know and have the correct information in regard to sex and marriage. Young people are perhaps the largest minority in the world, and India having a large majority of them, cannot leave them out by denying them the knowledge they seek in the population education field. Youth without proper nutrition, medical care, hardly any opportunity for education, employment or self development spells frustration. One of the outlets being early marriage, in our socio-cultural milieu, makes them the high fertility parents of the next generation. On the average 4.5 million marriages take place in India out of which in 3 million marriages girls are marrying between 15 and 19 years of age. In contrast, in Thailand and the Philippines it was only 15 per cent and in Japan, 1 per cent (1983). Perhaps Sri Lanka is the only exception in our area. What all this boils down to is a cycle where - early marriage, early pregnancy brings in children more by chance than by choice. Today, we know that childbirth has a damaging effect not only on the health of women physically not ready to become mothers but also on that of their children. Perhaps designing youth oriented services will assist in changing fertility patterns of the young, and the seeds of their own creativity other than procreation will get a chance to blossom before they are damaged by frequent pregnancies.

From all that I have said I am sure you can well visualise that the family welfare umbrella today is even wider than a parachute. Combining family

planning with different developmental activities seems to be the name of the game. Through integrated projects we can now understand the link between health and family planning, which ultimately leads to greater contraceptive acceptance. If the keepers of your management skills could go into the various schemes which the Central and State governments have designed and in which other NGOs are involved, we will not really need to reinvent the wheel; each one of us can find a niche of activity somewhere. If I may be allowed to illustrate the above with a little anecdote: the British parliamentarians were heatedly debating as to whether to separate the fisheries department from the agriculture department. Winston Churchill, known for his wit and humour, sealed the issue when he said "Mr. Speaker, Sir, there is a lot to be said for the good old fish and chips together on the same plate".

I would however like to caution that all our schemes and strategies which look so marvelous on paper, suffer from lack of depth, quality of performance and accountability, when it comes to actual implementation, and hence very quickly lose credibility. This is where the corporate sector can chip in to lay sturdy foundations and strengthen the edifice through quality of work and efficient management

By now you must be wondering what is FPAI's strategy? May I say that whatever I have been talking to you about has been filtered through the fine sieve of programmes conducted by FPAI in clinical and educational fields, through its network of 41 Branches, 18 Rural Integrated Projects, and its support to 27 NGOs in the country. Perhaps an area which we ourselves find needs the most strengthening in our strategies to support all our programmes would apply to the corporate sector as well, and that is training for every level of activity with a stronger component of monitoring and evaluation.

In conclusion I would like to pinch the six "Cs" from the vocabulary of Mrs. Avabai B. Wadia, President of FPAI, who when speaking on the credibility of voluntary organisations, mentioned their Capacity, Communication, Contacts, Continuation, Cost-effectiveness, and perhaps the most important, Catalytic role in stimulating other organisations and groups to supplement and complement their efforts. If I may, I would add two more "Cs" to lend greater credence to voluntary organisations, and they are: Care and Concern.

Today, corporate management has shown that its outreach is not limited to the cloistered domain of committee rooms, workshops and seminars, and is taking off its gloves to grapple with a real problem. We, in the FPAI, will lend all support and guidance to assist them.

# **INTER-DISTRICT AND INTER-REGIONAL VARIATIONS IN INCIDENCE OF CHILD MARRIAGE AMONG FEMALES AND ITS INTER-CENSAL CHANGES IN UTTAR PRADESH**

**DR. J.N. SRIVASTAVA\***

## **INTRODUCTION**

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The incidence of child marriages among females is not only an important factor underlying the high fertility of Indian couples but is also responsible, to a great extent, for ill health and mortality among females, and the overall low status of women in the country. Despite the Child Marriage Restraint Act, known as the Sarda Act of 1929, prescribing the legal minimum age at marriage for females at 14 years, and subsequently raising it to 15 years in 1949, 51.4 per cent of females in Uttar Pradesh were reported to have been married when they were under 15 years of age<sup>1</sup>. A fresh legislation, the Child Marriage Restraint Amendment Act passed in March 1978 and enforced from 1st October 1978, raised the minimum age of marriage for girls to 18 years.

In an earlier study<sup>1</sup> in Uttar Pradesh, the incidence of child marriages in 1961 and 1971 was observed to vary inversely with the level of development.

## **OBJECTIVES**

Utilising the findings of the author's earlier investigation<sup>1</sup> on the problem, the present paper seeks to study the pattern of inter-censal changes in female child marriages and the acceleration of these changes by development level, in Uttar Pradesh, both region-wise and district-wise, and attempts to draw conclusions of policy relevance regarding the possible reduction in child marriage incidence and its variation.

The present investigation was conducted on the earlier pattern with a few additions and minor alterations to make the analysis more meaningful. Five economic regions of the State were analysed in place of the administrative divisions examined in the earlier study<sup>1</sup>. Further, besides analysing inter-censal changes between 1971-81, the acceleration in decline of the incidence over 1961-71 for the State and districts was also analysed. Again, while it was of interest to study if a negative relationship between incidence of child

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marriage and development obtained in 1981 as well, the inter-censal decline in incidence was examined for different development levels by computing rates for four groups of districts belonging to four levels of development as determined by the Census Commissioner of India for the 1961 Census<sup>2</sup>, in the absence of any later classification. The use of the 1961 classification for 1971 and 1981 assumes that there has been no change in relative levels of development of various districts since 1961.

## **METHODOLOGY AND DATA**

The percentage of girls married below age 15 was estimated by interpolating the percentage using Newton's method of forward interpolation from the percentage single in the age groups 10-14, 15-19 and 20-24 computed from the 1981 census data on marital status distribution. The marital status distribution data by age were drawn from the Social and Cultural Tables for Uttar Pradesh, Part IV-A, 1981.

For studying regional variations in child marriage incidence and variations in the incidence by development levels, the average of district level incidence included in the regional or developmental category was computed. In order to ensure that estimates of regional or developmental categories truly reflect regional or developmental patterns in district level incidence, it was hypothesised that the districts included in various categories are relatively homogeneous in respect of the incidence of child marriages. This method is different from the one where estimates of a regional or developmental category may be directly made by treating it as a unit of observation. However, since the purpose here was to test the hypothesis of homogeneity of the districts included in various regions in this respect, the former method was adopted. The hypothesis of homogeneity of districts was tested by computing the coefficient of variation among the districts of the category and comparing it with the coefficient of inter-district variation for the State. If the former coefficient was smaller than the latter, it was taken to be indicative of the fact that the districts included in the various categories are relatively homogeneous. The analysis was done both for 1971 as well as 1981 and matching the findings of the two years, ten years apart, was taken to lend support to the hypothesis regarding homogeneity.

## **RESULTS AND DISCUSSION**

### **District Level Pattern of Child Marriage Incidence and its Changes**

Table 1 presents estimates of the incidence of child marriage for 1981 together with 1971 estimates drawn from the earlier study and the implied inter-censal changes over the 1971-81 decade.

TABLE 1

Percentage of girls married below age 15 in Uttar Pradesh and districts in 1971 and 1981 and inter-censal changes

State/District	1971	1981	Absolute change 1971-81	Percentage change 1971-81
Uttar Pradesh	51.38	38.30	-13.08	-25.46
Uttar Kashi	49.95	31.54	-18.41	-36.86
Chamoli	37.40	26.96	-10.01	-27.91
Tehri Garhwal	43.94	28.33	-15.61	-35.53
Dehra Dun	21.85	10.01	-11.84	-54.19
Garhwal	25.98	14.83	-11.15	-42.92
Prithwaragarh	41.02	31.34	-9.68	-23.60
Almora	37.93	26.51	-11.42	-30.11
Nainital	33.88	18.01	-15.87	-46.84
Saharanpur	35.59	19.50	-16.09	-45.21
Muzaffarnagar	33.88	22.53	-11.35	-33.50
Bijnor	29.30	11.26	-18.04	-61.57
Meerut		19.09		
Ghaziabad	27.28	20.17	-7.11	-26.06
Bulandshahr	—	21.81		
Moradabad	32.37	22.44	-9.93	-30.68
Rampur	33.57	20.61	-12.96	-38.61
Badaun	33.69	19.74	-13.95	-41.41
Bareilly	48.29	37.29	-11.00	-22.78
Pilibhit	43.00	30.27	-12.73	-29.60
Shahjahanpur	47.75	34.40	-13.35	-27.96
Aligarh	51.86	40.30	-11.56	-22.29
Mathura	39.47	24.37	-15.10	-38.26
Agra	43.00	30.71	-12.29	-28.58
Etah	39.27	25.59	-13.68	-34.84
Mainpuri	51.72	32.78	-18.94	-36.62
Farukhabad	55.27	34.87	-20.40	-36.91
Etawah	46.58	34.44	-12.14	-26.06
Jalaun	54.43	34.42	-20.01	-36.76
Jhansi	64.95	42.20	-22.75	-35.03
Lalitpur	59.28	42.61		
Hamirpur	59.28	48.35	-10.93	-18.44
Banda		60.82		
Kanpur	62.09	49.42	-12.67	-20.41
Fatehpur	67.06	51.80	-15.26	-22.76
Kheri	34.92	18.57	-16.35	-46.82
Sitapur	47.65	27.53	-20.12	-42.22
Hardoi	51.30	38.81	-12.49	-24.35
Unnao	49.80	40.03	-9.77	-19.62
Lucknow	40.95	39.06	-1.89	-4.62
Rae Bareilly	48.76	28.88	-19.88	-40.77
Bara Banki	33.02	20.93	-12.09	-36.61
Allahabad	60.27	51.79	-8.48	-14.07
Bahraich	57.55	51.23	-6.32	-10.98
	49.94	37.25	-12.69	-25.41
	48.42	51.81	3.39	7.00

TABLE 1 (Contd.)

State/District	1971	1981	Absolute change 1971-81	Percentage change 1971-81
Gonda	70 43	58 98	-11 45	-16 26
Faizabad	77 53	62 53	-15 00	-19 35
Sultanpur	74 78	67 91	- 6 87	- 9.19
Pratapgarh	79 06	59 09	-19 97	-26 26
Basti	79 96	63 89	-16 07	-20.10
Gorakhpur	68 93	55 74	-13 19	-19 14
Deoria	58 15	47 24	-10 91	-18 76
Azamgarh	71 29	58 50	-12.79	-17 94
Jaunpur	70 65	57 80	-12 85	-18 19
Ballia	57 87	44 69	-13 18	-22 78
Ghazipur	63 20	50 37	-12 83	-20 30
Varanasi	58 40	50 09	- 8 31	-14 23
Mirzapur	60 32	52 44	- 7 88	-13 06

### Inter-District Variation in 1981

At the state level, more than one-third of the girls (38.8 per cent) were estimated to have been married below age 15 in 1981. At the district level, the percentage varied from as high as 67.91 per cent in Sultanpur district in eastern Uttar Pradesh to a low of 10.01 per cent in Dehradun district in northern Uttar Pradesh. In general, districts of eastern Uttar Pradesh had the highest incidence and were followed in descending order of incidence by districts of the Bundelkhand region, Central Uttar Pradesh, Western Uttar Pradesh, and the hill regions. The pattern of variation was similar to that observed in 1961 and 1971, and was the reverse of that observed in respect of the mean age at marriage of females, estimated elsewhere<sup>14</sup>.

The inter-district variation in the percentage of girls married below age 15 was computed in terms of the coefficient of variation. With the district average for the State at 37.25 and a standard deviation of 14.98, the coefficient of variation in child marriage incidence in the State worked out to be 44.43 per cent.

### Inter-Censal Change, 1971-81

As seen from Table 1, the incidence of child marriage in Uttar Pradesh over the decade 1971-81 declined from 51.38 per cent in 1971 to 38.30 per cent in 1981 implying an absolute decline by 13.08 percentage points. The percentage decline in child marriage incidence showed a larger decline by 25.46 per cent. At the district level, all the districts except Bahraich registered a decline. Among the remaining 53 districts, absolute declines in child marriage incidence varied from a maximum of 22.75 percentage points in Jalaun to a minimum of 1.89 percentage points in Hardoi. Hardoi was also the district which had recorded the minimum decline in child marriage incidence in



percentage terms (by 4.62 per cent), though the maximum decline in percentage terms occurred in Bijnore (61.5 per cent). In general, the high incidence districts registered smaller percentage declines than the low incidence districts. This increased the inter-district variation in child marriage incidence over the decade as reflected by an increase in this coefficient from 29.1 per cent in 1971 to 44.4 per cent in 1981.

### Acceleration in Decline in Child Marriage Incidence

Partly due to the legislative measure in the form of the Child Marriage Restraint Amendment Act 1978, but mainly due to improvements in socio-economic development, an acceleration in the decline in child marriage incidence was observed during the 1971-81 decade over the preceding decade, 1961-71. This acceleration occurred both in terms of an absolute decline in percentage points as well as in terms of percentage decline.

For studying the acceleration in child marriage incidence at the district level, it would be more appropriate to examine the percentage decline than the percentage point decline\*. District level absolute and percentage changes in child marriage incidence, and the acceleration in percentage changes are given in Table 2.

TABLE 2

Inter-censal changes in acceleration of decline in child marriage incidence					
State/District	Absolute change		Percentage change		Acceleration (%)
	1961-71	1971-81	1961-71	1971-81	1971-81 over 1961-71
Uttar Pradesh	-10.37	-13.08	-16.79	-25.46	51.63
Uttar Kashi	-4.34	-18.41	-7.65	-36.86	381.83
Chamoli	-13.45	-10.41	-26.45	-27.91	5.48
Tehri Garhwal	-9.26	-15.61	-17.41	-35.53	104.08
Dehra Dun	-12.32	-11.84	-36.06	-54.19	50.28
Garhwal	-16.37	-11.15	-38.65	-49.92	11.05
Pithoragarh	-16.13	-9.68	-28.22	-23.60	-16.37
Almora	-20.68	-11.42	-35.28	-30.11	-14.65
Nainital	-14.48	-15.87	-29.94	-46.84	56.55
Saharanpur	-6.93	-16.09	-16.20	-45.21	177.36
Muzaffarnagar	-8.71	-11.35	-20.45	-33.50	63.81
Bijnor	-8.02	-18.04	-21.49	-61.57	-28.37
Meerut					
Ghaziabad	-15.60	-7.11	-36.38	-26.06	-28.37
Bulandshahr	-14.74	-9.93	-31.29	-30.68	-1.95
Moradabad	-11.88	-12.96	-26.13	-38.61	47.76
Rampur	-14.47	-13.95	-30.05	-41.41	37.80
Badaun	-10.43	-11.00	-17.76	-22.78	28.27
Barilly	-10.75	-12.73	-20.00	-29.60	48.00

TABLE 2 (Contd.)

State/District	Absolute change		Percentage change		Acceleration (%)	
	1961-71	1971-81	1961-71	1971-81	1971-81 over 1961-71	
Pilibhit	- 9.66	-13.35	-16.83	-27.96	66.13	
Shahjahanpur	- 5.60	-11.56	- 9.75	-22.29	128.62	
Aligarh	- 8.59	-15.10	-17.87	-38.26	114.10	
Mathura	- 7.90	-12.29	-15.52	-28.58	84.15	
Agra	-10.48	-13.68	-21.07	-34.84	65.35	
Etah	- 6.56	-18.94	-11.26	-36.62	225.22	
Mainpuri	- 7.77	-20.40	-12.33	-36.91	199.35	
Farukhabad	-12.39	-12.14	-21.01	-26.06	24.04	
Etawah	- 7.08	-20.01	-11.51	-36.76	219.37	
Jalaun	- 6.60	-22.75	- 9.22	-35.03	279.93	
Jhansi	}					
Lalitpur		-13.47	-10.93	-18.52	-18.44	- 0.43
Hamirpur		-15.47	-12.67	-19.95	-20.41	2.31
Banda		- 9.64	-15.26	-12.57	-22.76	81.07
Kanpur		-14.91	-16.35	-29.92	-46.82	56.48
Fatehpur		-13.21	-20.12	-21.71	-42.22	94.47
Kheri		- 7.97	-12.49	-13.45	-24.35	81.04
Sitapur		-10.28	- 9.77	-17.11	-19.62	14.67
Hardoi		-17.06	- 1.89	-29.41	- 4.62	- 84.29
Unnao		- 7.78	-19.88	-13.60	-40.77	199.78
Lucknow		-12.36	-12.09	-27.24	-36.61	34.40
Rae Bareli		-13.47	- 8.48	-18.27	-14.07	- 22.99
Bara Banki		-13.33	- 6.32	-18.81	-10.98	- 41.63
Allahabad		-18.97	-12.69	-27.53	-25.41	- 7.70
Bahraich		-21.30	3.39	-30.55	7.00	
Gonda		- 3.22	-11.45	- 4.37	-16.26	272.08
Faizabad		- 4.68	-15.00	- 5.69	-19.35	240.07
Sultanpur		- 8.83	- 6.87	-10.56	- 9.19	- 12.97
Pratapgarh		- 3.28	-19.97	- 3.98	-25.26	534.67
Basti		- 0.97	-16.07	- 1.20	-20.10	1575.00
Gorakhpur		- 3.06	-13.19	- 4.25	-19.14	350.35
Deoria		- 3.03	-10.91	- 4.95	-18.76	278.99
Azamgarh		- 8.41	-12.79	-10.55	-17.94	0.05
Jaunpur		- 3.53	-12.85	- 4.76	-18.19	282.14
Ballia		- 7.75	-13.18	-11.81	-22.78	92.89
Ghazipur		- 9.71	-12.83	-13.32	-20.30	52.40
Varanasi		- 7.98	- 8.31	-12.02	-14.23	18.38
Mirzapur		-11.18	- 7.88	-15.64	-13.06	- 16.50

Note: 1961-71 changes have been computed from the earlier investigation (J.N. Srivastava<sup>1</sup>)

The table reveals that out of 54 (1971) districts, acceleration in terms of percentage decline was experienced by 42 districts, and deceleration by the remaining 11 districts during 1971-81 over the preceding decade, with one district showing an increase in incidence over 1971-81.

### Regional Pattern in Child Marriage Incidence and its Changes

The five geographic regions studied were the Hill, the Western, the Central, the Bundelkhand and the Eastern regions. In 1981, the Hill region had eight districts (1 to 8 in Table 1), the Western region nineteen districts (9-27); the Bundelkhand region, five districts (28-32); the Central Region nine districts (33-41) and the Eastern region fifteen districts (42-56). It may be noted that in the 1971 analysis<sup>1</sup> the Western Region had only 18 districts; and the Bundelkhand region, 4 districts, instead of 19 and 5 districts respectively in 1981, as one district in each of these two regions (Meerut in the Western region and Jhansi in Bundelkhand region) was split into two after 1971 (Meerut and Ghaziabad for Meerut and Jhansi and Lalitpur for Jhansi). Therefore, for comparing 1981 estimates with 1971 estimates, the estimate of the region as it existed in 1971 (given in brackets) was used.

The estimate of child marriage incidence and coefficient of inter-district variation for 1971 and 1981 are given in Table 3.

TABLE 3

Percentage of girls married below age 15 in the economic regions of Uttar Pradesh, 1971 and 1981

Name of region	1971			1981		
	No of districts	Percentage	Coefficient of variation (%)	No of districts	Percentage	Coefficient of variation (%)
Hill	8	36.49	23.62	8	23.44	32.30
Western	18	41.46	20.86	19 (18)	27.18 (27.53)	28.04 (27.93)
Central	9	47.14	18.58	9	35.20	32.33
Bundelkhand	4	63.35	4.47	5 (4)	49.37 (47.94)	13.85 ( 7.47)
Eastern	15	65.93	14.88	15	54.56	14.11
State average	54	50.09	29.09	56 (54)	37.25 (37.23)	44.43 (39.75)

The inter-district coefficient of variation in each region was below the inter-district coefficient of variation for the State both in 1971 and 1981, suggesting that the districts included in each region are relatively more homogenous than the districts of the state. It also suggests that the district averages for the regions are meaningful averages of homogeneous districts. Among the five regions, child marriage incidence was seen to vary consistently both in 1971 as well as 1981. In 1981, the Hill region had the lowest incidence of child marriage at 23.4 per cent followed by the Western region (27.18 per cent), the Central region (35.20 per cent), and the Bundelkhand

region (49.37 per cent); the Eastern region had the highest incidence of child marriage (54.56 per cent). The child marriage incidence in the first three regions, was below the State average while that in the latter two regions was above it. This was similar to the pattern of regional variation in child marriage incidence observed in 1971.

### Inter-censal Changes and Acceleration in Decline

In view of the wide variation in child marriage incidence among the five regions of Uttar Pradesh, it was of interest to examine the regional pattern in decline over 1971-81 in order to find out if there is a possibility of bridging these regional differences in the near future. Further, the decline over 1971-81 was also compared with the decline over 1961-71 for understanding the regional pattern of acceleration in decline. Table 4 presents the relevant information.

TABLE 4

**Regional pattern in changes in child marriage incidence and acceleration in its decline**

	1961-71		1971-81		Acceleration in % decline
	Absolute decline (% points)	Percentage decline	Absolute decline (% points)	Percentage decline	
Hill	-13.36	-26.80	-13.05	-35.76	+33.43
Western	-9.87	-19.23	-13.93	-33.60	+74.73
Central	-12.26	-20.64	-11.94	-25.33	+22.72
Bundelkhand	-11.29	-15.13	-15.41	-24.33	+57.88
Eastern	-7.73	-10.49	-11.37	-17.25	+64.44
Uttar Pradesh	-10.37	-16.80	-13.08	-25.46	+51.55

No clear regional pattern was visible over 1971-81 in terms of an absolute decline in percentage points. However, since it would be more appropriate to study the pattern of percentage decline rather than of absolute decline in percentage points (as areas having low incidence are not likely to experience large declines in terms of percentage points as compared to those with high incidence).

The percentage decline in child marriage incidence over 1971-81 was found to vary inversely with the level of child marriage incidence itself. The percentage decline at 35.8 per cent was the highest in the Hill region and the lowest (less than half of it or 17.3 per cent) in the Eastern region having the highest incidence of child marriage (54.6 per cent). In other regions also, it varied inversely with the level of incidence. The regional pattern implies a widening of regional differences in child marriage incidence over time and

does not give hope of its early elimination, particularly in regions of high incidence like the Eastern region which has also registered the lowest decline in terms of percentage points.

The analysis of the pattern of acceleration in percentage decline in child marriage incidence during 1971-81 over 1961-71 however, revealed some bright features. Although the highest acceleration in percentage decline (74.7 per cent) was experienced in the Western region which has a low incidence of child marriages, the Eastern region with the highest incidence of child marriage registered on 64.4 per cent acceleration in percentage decline, and the Bundelkhand region with the next highest incidence of child marriage, registered a 57.9 per cent acceleration in percentage decline, which were above the State average. The partially high acceleration in the Eastern region might be due to the very low decline recorded over the 1961-71 decade. However, if efforts are made to accelerate the decline in child marriage incidence in the high incidence regions in the coming decades, it might be possible to reduce the inter-regional differences in child marriage incidence within the span of a few decades.

### Variations in Child Marriage Incidence and its Changes by Level of Development

The estimated incidence of child marriages for different developmental categories is presented in Table 5 together with the coefficient of inter-district variation within each category.

TABLE 5

Percentage of girls married by age 15 by level of development

Development level	No of districts	1971		1981	
		Percentage	Coefficient of variation (%)	Percentage	Coefficient of variation (%)
Highest	10*	34.28	16.7	21.04	24.6
Second	10*	44.76	25.6	32.60	41.6
Third	6	54.14	10.3	36.50	9.5
Lowest	28	56.79	24.6	44.78	30.5
Lowest excluding six hilly districts	22	61.55	18.4	49.75	21.5
State average	54	50.09	29.1	37.23	39.8

\* For comparative purposes, the area of 1971 districts of Meerut and Jhansi was used for 1981 as well.

The table demonstrates that the incidence of child marriages varied inversely with the level of development. In 1981, at 21.04 per cent, the

incidence was the lowest in the highest development category. As compared to this category, the incidence was higher by about 11 percentage points in the second highest category, by about 15 percentage points in the third highest category, and higher by about 23 percentage points in the lowest category, in which it was more than twice that in the highest category. When the six hilly districts in the lowest category were excluded on the consideration that marital behaviour in these districts is influenced by certain peculiar features of the region unrelated with level of development, the estimate for the lowest category exceeded the estimate for the highest category by about 28 percentage points. Except for the second category in which the inter-district coefficient of variation marginally exceeded the State figure, the coefficient of variation in the other categories was significantly lower than the corresponding State average. It demonstrates that, by and large, the districts included in each category are relatively homogeneous and the inverse relationship observed above is a true relationship between the incidence of child marriage and the level of development. A strikingly similar inverse relationship was observed in 1971 and also in 1961 in the earlier study<sup>as cited in the footnote to Table 5</sup>. This consistent finding at three points of time inspires confidence in the relationship and suggests its stability over time. The finding matches with the findings of other studies of the author<sup>7</sup> that developmental factors exercise a strong negative influence on the incidence of child marriage and a strong positive influence on female and male marriage ages in the State of Uttar Pradesh and also in India as a whole<sup>6-8</sup>.

### **Inter-censal (1971-81) Change by Level of Development**

To confirm further the depressing influence of development on child marriage incidence, the percentage decadal declines in the incidence were computed for different development categories to examine the relationship between the two. Further, as there was an acceleration in decline in child marriage incidence at the State level, an attempt was made to see if there was any pattern in this acceleration by development levels. Higher acceleration at higher levels of development or lack of any pattern with developmental levels would be suggestive of the fact that developmental forces are the main factors responsible for reduction in child marriage incidence. Table 6 presents this analysis.

Over the 1971-81 decade both absolute decline in percentage points as well as percentage decline were the highest - 13.18 and 39.10 respectively in the highest development category and the lowest - 12.01 and 22.14 respectively in the lowest development category. When the six hilly districts were excluded from the lowest category, the decadal decline was further reduced. Even considering all categories, both the indices of decline varied directly with the level of development barring one exception. An almost similar

TABLE 6

## Patterns of change in child marriage incidence by development levels

Level of development	1961-71		1971-81		Acceleration %
	Percentage points	Percentage	Percentage points	Percentage	
Highest	-11.16	-25.08	-13.18	-39.10	+55.9
Second	-12.11	-21.95	-12.08	-30.10	+33.1
Third	-7.66	-12.54	-17.63	-32.29	+57.5
Lowest	-9.88	-15.76	-17.01	-22.14	+40.7
Lowest excluding six hilly districts	-8.92	-13.09	-11.80	-19.22	+46.8
State average	-10.37	-16.80	-13.08	-25.46	+51.6

relationship was obtained for the 1961-71 decade. Thus, the decline in child marriage incidence was observed to be directly related to the level of development. This finding further confirms the earlier one regarding the depressing influence of development on child marriage incidence. Further, the findings that child marriage incidence varies inversely with the level of development and the decline in this incidence varies directly with it, have serious implications for the future in that differences between different development categories are likely to widen in the coming decades. However, the findings also have a positive implication in that the promotion of development - social, economic, infrastructural etc., is the only effective way of reducing the incidence of child marriage.

No clear pattern of acceleration by development level is discernible from the above analysis. However, in the lowest category, which is larger than the other three categories put together, the rate of acceleration in decline of child marriage incidence is quite below the State average. This further confirms the predominant role of developmental forces in depressing child marriage incidence. The finding implies that there can be no hope of reducing this incidence significantly even in the distant future without promoting development.

### SUMMARY

Estimates of child marriage incidence among females in the State of Uttar Pradesh showed that the incidence is on the decline. It declined from 61.89 per cent in 1961 to 51.4 per cent in 1971, and further to 38.8 per cent in 1981. Another encouraging feature is that there has been an acceleration in this decline during the 1971-81 decade over the preceding decade due to improvements in socio-economic development and some possible effect of the enactment of the Child Marriage Restraint Amendment Act of 1978. However,

large variations among districts and regions present a depressing picture. Another worrying feature is that the rate of change in the incidence varies inversely with the level of the incidence. Districts recording higher incidences have registered, in general, smaller declines and vice-versa. The same is true for regions. Consequently, inter-district and inter-regional variations have increased over time.

The analysis of the relationship of child marriage incidence with level of development revealed that the incidence varied inversely with level of development at three points of observation, namely, 1961, 1971 and 1981. A further probe into the depressing influence of development forces on child marriage incidence by computing rates of decadal declines over the 1961-71 and 1971-81 for different development categories revealed that these rates are positively related with development. The analysis of the rate of acceleration in decline did not show any consistent pattern by the level of development but in the lowest category, which is larger in size than three higher categories combined, the rate of acceleration in decline was seen to be much below the State average. These findings suggest that the promotion of socio-economic development is the only effective way of eliminating child marriages with legislative provisions playing only a marginal role

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# **IMPACT OF TRAINING ON THE PERFORMANCE OF TRADITIONAL BIRTH ATTENDANTS**

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**and**  
**DR. S.K. CHATURVEDI\*\***

## **INTRODUCTION**

Traditional birth attendants or dais play a significant role in midwifery practices in all developing countries; they deliver nearly 60-80 per cent of the infants<sup>1</sup>. These women have remained the most suitable persons for conducting deliveries in rural areas because of their easy availability and cultural acceptability. They are usually illiterate women who have learnt their skills through apprenticeship and experience rather than through formal education and training, and as such, their unsafe practices are largely responsible for the high neonatal mortality and morbidity rates<sup>2</sup> in rural areas.

In 1957, the Government of India launched a training programme for dais in the belief that training and involvement of this vast human resource who already have certain basic skills, in the MCH service programme, would go a long way in reducing infant and maternal mortality rates. The aim is to train one traditional birth attendant in each village or one for every thousand population<sup>4</sup>.

## **OBJECTIVES**

Since the inception of the official training programme for dais, nearly 450,000 dais have been trained. However, the impact of the training on their performance as well as their proper utilisation is yet to be assessed. There is a need, therefore to conduct such evaluatory studies. The present study is an attempt in this direction.

## **STUDY DESIGN**

The study was conducted in three primary health centres included under the Reorientation of Medical Education Scheme of the S.M.S. Medical College, Jaipur, Rajasthan, between August 1984 to August 1985. The centres were Bassi, Bhanpurkalan and Sirsi.

The same sample design was followed in all the three PHCs. All

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traditional birth attendants trained after 1977 in the three centres, numbering 182, and an equal number of untrained dais were included in the study. A structured interview technique was used. The respondents were interviewed as per a standard protocol either at their houses or at their work places.

## RESULTS

### Socio-economic Profile

The mean age of the respondents was 48 years. All were married. About 16.5 per cent of the trained dais and 20.9 per cent of the untrained ones were widows. Trained respondents had on average 4.5 living children, while untrained respondents had 5.0 living children. The majority were illiterate, and their monthly family income ranged between Rs.150 to Rs.1360. The mean number of years of experience in midwifery was 17 years.

### Antenatal Contact

One of the important requirements in the delivery of MCH services is the registration of the mother during the antenatal period. It was interesting to note that 63.7 per cent of the mothers delivered by the trained dais had registered at the sub-centre during the antenatal period as compared to only 25.3 per cent of those delivered by their untrained counterparts.

### Advice given to Mothers

The responses elicited from the dais about the pattern of advice given to pregnant women is presented in Table 1.

TABLE 1

Pattern of advice given by dais to mothers

	Trained (N = 182)	Untrained (N = 182)
Contact	73 (40.1)	33 (18.1)
Registration at Subcentre	30 (16.5)	33 (18.1)
Regular check up at Subcentre/PHC	30 (16.5)	19 (10.4)
Immunisation (T.T)	46 (25.3)	28 (15.4)*
Nutrition for mothers	46 (25.3)	25 (13.7)
Anaemia prophylaxis	50 (27.5)	27 (14.8)*
Preparation for confinement	47 (25.8)	32 (17.6)
Family planning	53 (29.1)	24 (13.2)*
Personal hygiene	71 (39.0)	46 (25.3)*

\* =  $p < 0.001$

Table 1 reveals a significant difference between the trained and untrained dais in terms of contacting pregnant mothers ( $p < 0.001$ ) and giving

advice regarding immunisation ( $p < 0.001$ ), anaemia prophylaxis ( $p < 0.001$ ), family planning ( $p < 0.001$ ) and personal hygiene ( $p < 0.001$ ).

Table 2 presents the family planning methods promoted by the respondents during the course of her contacts with mothers. The findings indicate a significant difference between trained and untrained dais in the promotion of Nirodh, IUD and sterilisation ( $p < .001$ ).

TABLE 2

Distribution of dais by FP method promoted

FP method	Trained (N = 182)	Untrained (N = 182)
Nirodh	29 (15.9)	8 (4.4)*
Oral Pills	5 (2.7)	0 (0.0)
IUD	32 (17.6)	10 (5.5)*
Sterilisation	80 (43.9)	47 (25.8)*
MTP	0 (0.0)	0 (0.0)

\* =  $p < 0.001$

While almost twice as many trained dais promoted sterilisation than did untrained dais, the use of spacing methods such as the IUD and Nirodh was promoted by more than thrice the number of trained as compared to untrained dais.

### Instruments Used for Cutting the Umbilical Cord

The various type of instruments used by the respondents for cutting the umbilical cord included scissors, blades, sickles, knives and bamboo splinters. Almost half (45.6 per cent) of the trained dais preferred to use a blade as compared to 15.4 per cent of the untrained dais. However, 48.4 per cent of the untrained and 29.1 per cent of trained dais continued to use bamboo splinters.

### Purpose of Contacting Health Functionaries

Table 3 shows a distribution of the dais by the reasons for contacting health workers.

Almost all (95.6 per cent) the trained dais contacted the health worker for various purposes as compared to only 49.4 per cent of untrained dais, largely for antenatal and postnatal care, including pregnancy complications, registration of births and deaths, and family planning motivation.

### DISCUSSION

The findings of this study indicate a significant improvement in the performance of trained dais as compared to their counterparts. Similar results

TABLE 3

Distribution of dais by purpose of contact with the health worker

Purpose	Trained (N = 182)	Untrained (N = 182)
Contact	174 (95.6)	90 (49.4)
Registration of antenatal mothers	70 (38.5)	10 (5.5)
For getting mothers regular checkup and testing	7 (3.8)	0 (0.0)
For immunisation of mothers	9 (4.9)	5 (2.7)
For showing complicated cases	46 (25.3)	49 (26.9)
Iron-folic acid tablets for mothers	7 (3.8)	0 (0.0)
To learn how to manage difficult labour	3 (1.6)	0 (0.0)
To refer complicated cases	23 (12.6)	15 (8.2)
Contact for postnatal care of cases delivered by ANM	60 (33.0)	71 (39.0)
Care of new-born	7 (3.8)	9 (4.9)
Motivation for FP	23 (12.6)	18 (9.9)
Reporting births and deaths	38 (20.9)	3 (1.6)
For improvement of her own skills for MCH care	0 (0.0)	2 (1.1)

have been reported by other workers in Rajasthan and Andhra Pradesh. Not only did the trained dais promote family planning, including the use of spacing methods, and immunisation more actively than their untrained counterparts, but also helped to promote antenatal and post services as also the registration of births and deaths in their villages. Thus the programme to train traditional birth attendants has had a positive impact on the type of services provided by them. The training can thus be helpful in forging a functional relationship between the organised health services system and the community at large.

# **THE EFFECT OF BIRTH SPACING ON CURRENT FERTILITY**

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## **INTRODUCTION**

The advocacy of birth spacing under the health and family planning programme has been viewed as a key step in the sustained reduction in fertility. When family planning reaches an advanced stage in a society, most couples seek to control the timing as well as the number of births. It is, therefore, somewhat surprising that so little has been done to quantify the effect of birth spacing on current fertility or to understand the threshold duration or ideal duration of birth spacing for effecting a significant change in the level of current fertility.

Like many developing regions of the world, the recent population policy of India also reflects concern for birth spacing. The Seventh Five Year Plan document reiterates the use of spacing methods in order to increase the couple protection rate, especially among the younger age groups. The target of 18.9 million users of spacing methods (IUD and conventional contraceptives) in the Sixth Five Year Plan was increased to as high as 35.8 million during the Seventh Plan period<sup>1</sup>. The Plan document called for the adoption of imaginative and innovative measures for spreading the use of spacing methods and for making them freely and widely available through an effective social marketing mechanism. Such family welfare policies, perhaps, basically aim at increasing maximally the spacing between births through involuntary and/or voluntary control, which might improve the health of mothers and their children, and at the same time, help to reduce fertility. However, there appears to be a lack of clear guidelines regarding the birth spacing goal and its likely effect which might be expected to be observable on the birth rate and other current fertility indices for a population. It is needless to emphasise that it has important policy implications.

## **OBJECTIVES**

This paper therefore attempts to understand the likely effects of such birth spacing on current fertility through the adoption of a fertility decision-making model, making use of input parameters which approximate Indian demographic conditions. Thus, the model has been used to investigate the effects of birth spacing under ideal conditions, namely, clear-cut, unchanging

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spacing goals, no fetal loss, and freedom from failure of contraception, to realise a given common spacing goal and utilising for that purpose, a designated strategy regarding when to interrupt contraception. However, the actual timing of births varies stochastically among cohort members and their dispersion depends on the assumed mean value of fecundability. The birth schedule considered does not encompass a preferred interval from marriage to first birth, and priority has been given to understand the effects of each birth interval of convenient length after each birth.

## **METHODOLOGY**

### **The Fertility Decision-making Model**

The model to study the effects of birth spacing on fertility can be looked upon as a controlled experiment. Mainly two sets of current fertility rates would be obtained - one assuming usual reproductive behaviour (where reproduction is by and large at the observed level i.e. unaffected by any specific planning - the control set) and the other, with specific rules for birth spacing (the experimental set). All the input parameters would be identical for deriving these two sets of fertility rates except those of stopping rules. The difference in the fertility rates of the two sets (control and experimental) gives a measure of the impact of the birth interval on fertility. To obtain fertility rates, the analysis is carried out in two segments. The first segment derives estimates of birth probabilities for a given age and age at marriage of a woman through the probability model. The second segment involves the estimation of various fertility rates from age at marriage and age specific birth probability matrices derived in the first segment.

### *Derivation of Birth Probabilities*

The following assumptions are made in order to derive age at marriage and age specific birth probabilities

1. A woman is not pregnant at the time of consummation of her marriage and continues to be in marital union until she attains 45 years of age.
2. There is a one-to-one correspondence between a conception and a live birth i.e. each conception leads to a live birth.
3. The length of infecundable exposure associated with a conception is constant for all ages of the woman and does not vary from woman to woman.
4. Couples can conceive or take decisions regarding further fertility when the age of the previous child born is  $\leq$  years.
5. The probability that  $(i + 1)^{\text{th}}$  conception occurs during the time interval

( $t, t+dt$ ), given that the  $i^{\text{th}}$  conception occurred prior to time point  $t-\theta$  is  $\pi dt + \theta(dt)$  where  $t \geq i\theta, \pi > 0$  and zero otherwise. Here  $\theta = \max(G+M, G+\infty)$ , where  $G$  is the period of gestation and  $M$  is the period of postpartum amenorrhea. This assumption is equivalent to the assumption that waiting time for a conception after a woman becomes fecund following a live birth or after her marriage in case of first conception, follows an exponential distribution with mean time for conception  $(1/\pi)$ .

6. The probability of a woman giving birth to two children in the same year is zero.
7.  $\beta_x$  is the probability that a woman is not sterile at age  $x$  and before).

Some of the assumptions are no doubt strong but they may be considered as first approximations to the real process. Since the aim is to develop a differencing model to understand the changes in fertility under different birth intervals, fecundability ( $\pi$ ) over age is assumed to be constant for simplification of the model. However, ' $\beta_x$ ' is taken as a variable which to some extent takes care that the risk of conception varies over age  $x$ .

Let  $C_1, C_2, \dots, C_k$  be the events that a birth takes place to a woman in the first (same year), second, ... and the  $k^{\text{th}}$  year of marriage. Under the condition that all fecund women are exposed to the risk of conception, the probability of a woman giving birth in the  $k^{\text{th}}$  year of marriage,  $P^*(C_k)$ , is derived (for details of the proof, see Das<sup>2</sup>. Therefore,

$$P^*(C_k) =$$

where

$$\text{Pr. } [r < Z_m < r+1] = \begin{cases} \sum_{n=0}^{m-1} \frac{e^{-\pi r} (\pi r)^n}{n!} - \sum_{n=0}^{m-1} \frac{e^{-\pi(r+1)} \{\pi(r+1)\}^n}{n!} & \text{if } r > 0 \\ 1 - \sum_{n=0}^{m-1} \frac{e^{-\pi(r+1)} \{\pi(r+1)\}^n}{n!} & \text{if } r \leq 0 < r+1 \\ 0 & \text{if } r+1 \leq 0 \end{cases}$$

In the above expression,

$$r = t_{k-1} - (m-1)\theta, \theta = \max(G+\infty, G+M) \text{ and } t_k = k - 3/4$$

The unconditional birth probability,  $f_{x,y}$  for a woman of age  $x$  who married at age  $y$  is given by

$$P(C_k) = f_{x,y} = P^*(C_{x-y+1})\beta_x$$

where  $x = 15, 16, \dots, 44$   
 $y = 15, 16, \dots, 35$   
 and  $x \leq y$

The estimates of  $f_{x,y}$  for the control set ( $f_{x,y}^C$ ) and experimental set ( $f_{x,y}^E$ ) can be obtained making use of the corresponding value of in the above expression.

### Derivation of Current Fertility Rates

Having obtained the estimates of age at marriage and age specific birth probabilities under the various hypothetical cases under consideration, the corresponding fertility rates during 1981 and their trends during the next fifteen years could be derived. The current fertility indices considered are age specific marital fertility rate (ASMFR), total marital fertility rate (TMFR), general marital fertility rate (GMFR) and crude birth rate (CBR). For this purpose, it is necessary to derive the currently married women by their current age at each future year. This is done by projecting the currently married women in 1981 into future years, by using the appropriate joint survival ratio and taking into account new entrants through marriage at each year. The details of obtaining currently married women by current age in a given year  $J$ ,  $W_x^J$ , are given in an earlier work of the author<sup>2</sup>.

The single year ASMFRs ( $F_x$ ) as well as TMFR ( $T$ ), derived from  $F_x$ , are independent of  $J$  and can be obtained by

$$\begin{aligned} F_x &= P(\text{a married woman of age } x \text{ gives birth to a child}) \\ &= \sum_{y=15}^{35} P(\text{a woman of age } x \text{ gives birth to a child and the woman was} \\ &\quad \text{married at age } y) \\ &= \sum_{y=15}^{\min(x, 35)} f_{x,y} \cdot m_y \quad (x = 15, 16, \dots, 44) \end{aligned}$$

and  $T = F_x$

where  $m_y$  = Probability of a single woman marrying at age  $y$

$f_{x,y}$  = Probability of occurrence of a birth to a woman given that she is aged  $x$  and is married at age  $y$ .

Note that  $f_{x,y}$  is either  $f_{x,y}^C$  or  $f_{x,y}^E$ , depending on the group (control or experimental) for which the fertility rates are to be obtained.

It is now possible to derive the other measures of current fertility. The absolute number of births to currently married women aged  $x$  in the  $J$ th year can be obtained as

$$b_x^J = W_x^J F_x \quad (J=1981, 1982, \dots, 1996)$$

and the absolute number of births to the women in the age group 15-44 in the  $J$ th year can be obtained as



$$b^J = \sum_{x=15}^{44} b_x^J = \sum_{x=15}^{44} w_x^J F_x$$

where,

$W_x^J$  = Number of currently married women aged  $x$  in the year  $J$ .

Relating these births to currently married women, the birth rate, general marital fertility rate ( $G^J$ ) as well as ASMFRs in the conventional five year age groups ( $F_x$ ) for the control and experimental set in a given year  $J$  can be obtained<sup>2</sup>.

## RESULTS

Six hypothetical cases giving rules for the postponement of conception for a specified period after each birth, have been considered and in each case the expected level of future fertility has been computed for various levels of fecundability ( $\pi$ ). It may be noted that these hypothetical cases are arbitrary but are consistent with observed spacing attitudes. Though a large body of literature exists on birth interval analysis, an insignificant amount of literature pertains to spacing attitudes, especially in the developing countries. While reviewing such studies, Bongaarts and Potter<sup>3</sup> observed that ideal intervals between children are usually set at 2 years and upto 3 1/2 years. A birth interval exceeding 4 years is usually deemed too long; intervals under 2 1/2 years are typically regarded as safe, and durations of 2 1/2 to 4 years leave room for argument. The two most salient considerations in respect of the best spacing between children are limiting the load of child care and assuring that children become playmates.

Given the conceptive delays, the hypothetical cases considered here vary depending on the value of  $\infty$ . It is assumed that couples can conceive or take decisions regarding further fertility when the age of the previous child born is  $\infty$  years. The six hypothetical cases thus framed are described below:

Case 1 :  $\infty = 0$

Case 2 :  $\infty = 1$

Case 3 :  $\infty = 2$

Case 4 :  $\infty = 3$

Case 5 :  $\infty = 4$

Case 6 :  $\infty = 5$

It is seen that case 1 ( $\infty = 0$ ) is framed without any allowance for voluntary spacing, where reproduction is by and large at the observed level i.e. unaffected by any specific planning, and is treated as a control set. Cases 2 to 6 are meant for those couples who wish to postpone the next conception for a period of years following the last live birth. Using the results given in the previous section, the expected fertility trend in the above hypothetical

cases have been computed corresponding to  $\pi = .384$  and  $.612$ . These values have been chosen arbitrarily but are consistent with empirical estimates for Indian women <sup>4,5</sup>. The values of  $G(=0.75$  year) and  $M(=0.75$  year) which are used in the model, are based on the results of Saxena<sup>6</sup> and Venkatacharya<sup>7</sup>. Since  $\theta = \text{Max}(G+M, \kappa+G)$  and the minimum assumed value of  $\kappa$  is greater than that of  $M$  (except case 1, where  $\kappa=0$ ), the value of  $\theta$  always depends on the value of  $\kappa$  for the present analysis. In case 1,  $\theta = M+G$ , i.e. 1.50 years. Further, the value of  $(1-\beta_x)$  corresponding to ages 19, 24, 34, 39 and 44 (viz. 0.0542, 0.0284, 0.0949, 0.1362, 0.3688 and 0.5823 respectively) is taken to derive single year values by fitting a second degree polynomial, from a study based on Indian data<sup>8</sup>. The results are summarised in Tables 1-4.

### Impact on TMFR

Table 1 shows the total marital fertility rate (TMFR) under the six hypothetical cases. It is shown for a year only because TMFR is independent of the year  $J$  and remains stable during the period of projection (1981-96). The TMFRs are presented corresponding to different values of fecundability ( $\pi$ ) and rest period ( $\theta$ ).

TABLE 1

Impact of spacing between births on total marital fertility rate

Hypothetical cases	Rest period ( $\theta$ )	Value of TMFR* derived from the probability model	
		$\pi = .384^{**}$	$\pi = .612^{**}$
Case 1	1.50	5.31	6.97
Case 2	1.75	5.02	6.49
Case 3	2.75	4.15	5.09
Case 4	3.75	3.55	4.22
Case 5	4.75	3.12	3.62
Case 6	5.75	2.79	3.19

\* Based on single year age specific marital fertility rate which remains the same during the period of projection 1981-96

\*\* Fecundability level

As can be seen from Table 1, the proposed model is sensitive enough to indicate the variation in the level of fertility between the sets of values of the parameters  $\pi$  and  $\theta$ .

The impact of birth spacing on current fertility is clearly evident when TMFRs under different hypothetical cases are compared. For a given value of  $\pi$ , the total fertility decreases with an increase in spacing between births. For example, the TMFR of 5.31 observed under case 1 (control set, corresponding to  $\pi = .384$ ,  $\theta = 1.50$ ), which is quite close to the present level

of fertility in India, reduces by less than half (2.79) under Case 6 where all couples postpone the next conception until the last child born is 5 years of age. In other words, with such a spacing goal, a woman will end up with less than three children during her reproductive life. In case of relatively higher fecundability ( $\pi = .612$ ), a woman can have slightly more than three children with similar spacing preferences (Case 6). Even if all couples prefer to postpone their next conception until the last child born is three years old, (Case 4), the TMFR can at least be reduced by one-third its current level (see Table 1). Thus, the current level of fertility in a population like India can significantly be reduced if all couples postpone their next conception by at least three or more years.

### Age Specific Marital Fertility Rate

Table 2 shows the age specific marital fertility rates (ASMFRs) for a year under the different hypothetical cases. Panel A of Table 2 corresponds

TABLE 2

Age specific marital fertility rate under the different hypothetical cases of birth spacing at  $\pi = .384$  and  $\pi = .612$

Hypothetical cases	Rest period ( $\theta$ )	ASMFR (births per 1000 married women) in the age group					
		15-19	20-24	25-29	30-34	35-39	40-44
A. At $\pi = .384$							
Case 1	1 50	142 47	223.41	230.83	209.88	167 86	106 61
Case 2	1 75	136.45	211 19	217 63	197.63	158 19	100.50
Case 3	2 75	117.24	174.47	177 23	177.23	128.66	81 74
Case 4	3 75	103.59	149 42	149.75	149 75	108.44	68.87
Case 5	4.75	101.33	129 37	127.81	127.81	93 75	59.56
Case 6	5.75	101.33	110.56	112.19	112.19	82.30	52.25
B. At $\pi = .612$							
Case 1	1.50	189 65	293.37	302.34	274.85	219.78	137.35
Case 2	1.75	179.00	272.59	280.11	254.55	203.54	129.30
Case 3	2.75	147.36	213.95	216.39	196.57	157.12	99.84
Case 4	3.75	120.02	178.40	177.92	160.64	128.09	81.31
Case 5	4 75	114.69	152 68	147.85	133.17	107.25	68.61
Case 6	5 75	114.69	129.67	121.46	118.61	95.31	58.32

to a fecundability level ( $\pi$ ) of .384, while Panel B corresponds to one of  $\pi = .612$ . It may be noted that ASMFRs for any other year within 1981-86 are close to those presented in Table 2, for each of the six hypothetical cases. The impact of birth spacing on ASMFRs is clearly evident in all the age groups. For a given value of the parameter  $\pi$ , the fertility rate decreases with an increase in spacing between births in each age group. The pattern of ASMFR for the experimental set (Cases 2-6) is, however, similar to that

for the control set (Case 1). The reduction in total marital fertility rate as a result of adopting a particular spacing preference is because of the reduction in fertility in all the age groups, especially in the middle and older age groups.

### Impact on Birth Rate

Table 3 shows the crude birth rate under different hypothetical cases during the period 1981-96 corresponding to different levels of fecundability ( $\pi$ ). The results indicate that the birth rates, based on a given set of values of the parameters  $\pi$  and  $\theta$ , for the period 1981-96 are more or less stable except for a tendency to increase slightly in the later years (not shown for all the years in Table 3). This is due to the interaction between the changing age structure of the population and fertility rates.

TABLE 3

Impact of spacing between births on the crude birth rate (CBR), 1981-96

Hypothetical cases	Rest period ( $\theta$ )	Fecundability ( $\pi$ )	Crude Birth Rate (births/1000 population)			
			1981	1986	1991	1996
Case 1	1.50	384	32.04	31.10	31.11	31.42
		.612	41.59	40.41	40.43	40.83
Case 2	1.75	384	30.32	29.45	29.47	29.76
		.612	38.78	37.71	37.73	38.10
Case 3	2.75	384	25.03	24.40	24.43	24.67
		.612	30.51	29.79	29.83	30.13
Case 4	3.75	384	21.37	20.92	20.98	21.19
		.612	25.21	24.71	24.81	25.07
Case 5	4.75	384	18.70	18.42	18.48	18.65
		.612	21.53	21.25	21.37	21.58
Case 6	5.75	384	16.65	16.56	16.55	16.69
		.612	18.82	18.79	18.85	18.94

The impact of birth spacing on the birth rate is clearly evident from Table 3. The interpretation of the results is more or less similar to that of Table 1 where TMFRs based on the same sets of parameters are presented for a year. For a given value of  $\pi$ , the birth rate is expected to reduce with the increase in the value of  $\theta$ . In other words, the birth rate in a population could be greatly reduced through increased spacing between births. For example, in 1986, the birth rate of 31 per 1000 population observed under Case 1 (i.e. control set, corresponding to  $\pi = .384$  and  $\theta = 1.50$ ) which is quite close to the present level of birth rate in India, reduces to about 17 under Case 6 where all couples postpone the next conception until the last child born is five years of age. Even if all couples prefer to postpone the next conception until the last child born is three years old (Case 4), the same birth rate

reduces to about 21. In other words, a birth rate of 31 could be reduced by about one-third. In a population where the current level of fertility is relatively high, the reduction in fertility under the same spacing goal (Case 4) will be relatively more. For example, if the current birth rate in a population is considered to be more than 40 (as observed under Case 1 corresponding to parameters  $\pi = .612$  and  $\theta = 1.50$ ) during the year 1986, the expected reduction in the birth rate under Case 4 would be about 39 per cent. Thus, if all couples are persuaded to space their desired children by at least three years by adopting birth control measures, the birth rate in the population can at least be reduced to about 25 per thousand.

### SUMMARY AND CONCLUSIONS

This paper is concerned with the likely effects of birth spacing goals on the birth rate and other current fertility indices, so as to understand the threshold duration or ideal duration of birth spacing to effect a significant change in the level of fertility in a population. In this regard, a fertility decision-making model has been developed. It may however be noted that the model is developed under ideal conditions, viz., clear-cut, unchanging, common spacing goals, no fetal loss, and freedom from failure of contraception, and utilising for that purpose, a designated strategy regarding when to interrupt contraception. For illustration, the model is applied to Indian data. Although literature pertaining to spacing attitudes is scanty, it is observed that ideal intervals between children are set at 2 years to 3 1/2 years; a birth interval exceeding 4 years is usually deemed too long. The two most salient considerations in respect to the best spacing between children are limiting the load of child care and assuming that the children become playmates. Based on these considerations, apart from the control set (Case 1), five hypothetical cases giving rules for the postponement of conception for a specified period after each birth, have been framed to investigate the likely effects of birth spacing on fertility through the proposed model. Given the conceptive delays in a birth interval, the hypothetical cases considered here vary depending on the couple's decision when to interrupt spacing control so as to conceive following the last live birth.

The impact of birth spacing on fertility is clearly evident from the results when total marital fertility rates or birth rates under different hypothetical cases are compared. For a given value of fecundability, TMFR or the birth rate decreases with an increase in spacing between births. The results further reveal that even if all couples prefer to postpone their next conception until the last child is three years old, the birth rate of a population like India could at least be reduced to one-third its current level. In case of relatively higher fertility levels, the reduction under the same spacing goal is expected to be relatively more. Under this pattern of reproduction, couples are likely

to end up with three to four children, depending on their level of fecundability. Considering that desired family size is still high in developing countries, the threshold duration or ideal spacing goal to effect a significant reduction in the level of current fertility appears to be at least three years. A common spacing goal of three years may not be a difficult proposition considering that it is usually endorsed by couples in their spacing attitudes. Therefore, in order to translate the birth spacing policy into a reality, implementors of the family planning programme need to gear up their efforts whereby practical norms for adoption as well as discontinuation of contraception, following a live birth, are provided to couples. Through such efforts, if all couples are persuaded to space their desired children by at least three years, the present birth rate can at least be reduced to about 25 per 1000 population.

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# **BREASTFEEDING AND CONCEPTION INTERVAL—AN EMPIRICAL STUDY**

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## **INTRODUCTION**

A useful framework for studying the determinants of fertility is obtained by classifying them into factors that directly influence fertility, termed the intermediate fertility variables and the economic, social, cultural and environmental factors that affect fertility indirectly through their influence on the intermediate variables<sup>1</sup>. Davis and Blake<sup>2</sup> in their pioneering model classified the intermediate variables as intercourse variables, conception variables and gestation variables. Among these three sets of variables, the conception variables include (i) fecundity or infecundity as affected by involuntary causes, (ii) use or non-use of contraception and (iii) fecundity or infecundity as affected by voluntary causes. In all known societies, fertility is restricted in one way or another through these variables but the relative importance of each varies tremendously between societies.

Bongaarts<sup>3</sup> identified the four most important intermediate fertility variables - proportion married among females, the fertility inhibiting effect of breastfeeding, the prevalence of contraception, and the incidence of induced abortion. For a long time the two variables - age at entry into marriage and contraception - attracted the attention of demographers. A not uncommon but simplistic view of changing reproductive behaviour during the transition from high to low fertility holds that a rise in the practice of contraception is the only proximate cause of fertility decline<sup>4</sup>. But previous research has demonstrated that the principal proximate determinants are marriage pattern and duration and intensity of breastfeeding<sup>5</sup>.

In a period of change, the responses of the proximate determinants of fertility may be in opposite directions. Sometimes, some of the determinants may shift in the direction of lower fertility and some others tend to lead to an increase in fertility. Reduction in breastfeeding, later marriage and widespread use of contraception which occur during periods of modernisation are some obvious examples. The study of the so-called proximate determinants of fertility, has, thus emerged as an important area for analysing the trends in fertility behaviour.

A notable feature observed among women in developing countries is that most of them commence breastfeeding their babies soon after birth and

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continue till the milk flow stops or gets substantially curtailed. They may not be aware of the fact that breastfeeding is effective in postponing subsequent conception. There has been considerable research on the benefits of breastfeeding, particularly in relation to its role in contraception. These effects include prolongation of the period of postpartum amenorrhoea and the lengthening of the conception interval. Conception as well as breastfeeding patterns are generally affected by various factors important among them being the mother's age, parity, education, occupation and use of contraception.

### **OBJECTIVE**

The significance of breastfeeding as a method of contraception was studied in rural Zambia by Wenlock<sup>6</sup> who noted that the peak of new conceptions occurred between 25 and 27 months postpartum among women who breastfeed their children. Cantrella<sup>7</sup> stated that the potential role of lactational amenorrhoea as a child-spacing mechanism should not be underestimated and he contended that postpartum lactational amenorrhoea, though it does not offer complete protection against conception for individual mothers, is of value when a whole community is considered, that is, from a public health standpoint. Even in Kerala which has attained a higher level of demographic transition, studies<sup>8, 10</sup> have shown that there are a large number of men and women who are still reluctant to use any type of contraceptive. However, the average family size is found to be less than three among these groups and the spacing between children averages more than two years. This leads to an obvious question: What is the reason for this low average family size and considerably long intervals between conceptions if they are not practicing family planning? Is it because of prolonged lactation? Against this background, this paper seeks to evaluate the explanatory role of three factors - breastfeeding, postpartum amenorrhoea and mother's age in prolonging conception intervals in a population setting in Kerala.

### **SAMPLE DESIGN AND METHODOLOGY**

Since the purpose of this study was to examine the effect of breastfeeding on lengthening of the conception interval, the sample was restricted to women who gave a history of breastfeeding their babies for long durations and who were not using any form of contraception.

The study sample consisted of currently married females of one of the wards in Kesavadasapuram in Trivandrum city, the capital of Kerala. In order to determine the sample, the population of the area was screened for women who had at least two live births or who were expected to deliver the second child shortly. In all, 462 women were identified and 415 of them were sampled in the following manner: (1) women who have not practiced contraception between their first and second conceptions, and (2) women whose last child



was less than five years of age (in the case of women who had two or more children). These women were asked about their socio-economic background, lactational history and use of modern contraception. The lactational intervals were carefully noted in detail with regard to onset, duration, return of menstruation, and month of conception.

The relationship between the independent variables and that between the dependent and independent variables was determined using zero-order correlation and partial correlation analyses. The extent to which the conception interval can be prolonged as a result of lactation, postpartum amenorrhoea, and age was also studied by the linear regression method. Further, multiple regression analysis was carried out to find the effect of the factors on conception. The direct and indirect effect of each variable was investigated using path analysis. And finally, the application of life-table techniques to the data gave an idea of the average waiting time for the next conception. The functions were found out using the relationship  $nq_x = \frac{Ex}{N_x}$ ,  $nbo = nqo = Bo$  and  $nbx = (1-Bx)nqx$ .

## RESULTS AND DISCUSSION

Table 1 presents a summary of the selected demographic characteristics as well as information on the duration of breastfeeding, duration of postpartum amenorrhoea and average conception interval (period between first childbirth and second conception) of the women.

TABLE 1

Selected characteristics of the study sample

Characteristic	Value
Mean age	23.2 years
Mean age at marriage	20.6 years
Mean number of living children	2.25
Mean number of live births to women 35 years and older	2.42
Occupation - housewife	74%
Husbands - working	84%
Mean duration of breastfeeding	17.0 months
Mean duration of postpartum amenorrhoea	6.2 months
Average conception interval	22.7 months

Table 1 shows a moderately high age at marriage and a lower level of fertility as evidenced by the smaller number of live births to women aged 35 years and over. Though women seemed to breastfeed for longer periods, postpartum amenorrhoea extended on average, to six months only but spacing between children was more than two and half years. Earlier studies conducted in India have also found that in societies where lactation is universal

and prolonged, and where the average duration of lactational amenorrhoea is seven months, the average birth interval is 36 months<sup>11</sup>. Further, Prema and Ravindranath<sup>12</sup> have reported that the return of menstruation occurs earlier inspite of the child's being solely breastfed, that is, if breastfeeding is continued beyond 12-18 months. It may be noted that all the women participating in this study were literate and only less than 1 per cent of the husbands were illiterate.

The zero-order correlation matrix presented in Table 2 shows the inter-relationship between the variables under study.

TABLE 2

Zero-order correlations between the selected variables

	Conception	Breast-feeding	Post-partum amenorrhoea	Age
Conception	1 00	0.204*	0 142*	0.104*
Breast-feeding		1 00	0 267*	-0 024
Postpartum amenorrhoea			1.00	-0.021
Age				1 0

\* Significant at 5% level

By and large, the zero-order correlations between the variables did not appear to be strong though they were statistically significant (except in the case of the relationship between age and breastfeeding, and age and postpartum amenorrhoea). Of the three variables, the relationship between breastfeeding and conception was greater implying that a longer duration of breastfeeding lengthens the conception interval at least in a moderate way.

The relatively higher and significant positive correlation between breastfeeding and postpartum amenorrhoea shows the effect of breastfeeding in extending the duration of postpartum amenorrhoea as well. As age increases, the duration of breastfeeding and the time taken for the resumption of menstruation gets shortened. This may be due to the reduced milk flow of women of older ages or because most of the women may find alternatives for breastfeeding and resort to partial breastfeeding. Studies from developed countries suggest that the duration of lactational amenorrhoea is shorter in women who tend to introduce supplementary foods at an earlier age.

The simple correlation between the variables indicated a relatively high value between conception and breastfeeding. The partial correlation analysis (Table 3) shows that the independent effect of age is more pronounced than that of any other factor in influencing the relationship between conception and breastfeeding and that between conception and postpartum amenorrhoea.

The combined effect of postpartum amenorrhoea and breastfeeding when

**TABLE 3**  
**Partial and zero-order correlation coefficients**

$r_{12} : 0.204$	$r_{1,23} \quad 0.174$	$r_{1,23,4} : 0.177$
	$r_{1,24} \quad 0.208$	
$r_{13} \quad 0.142$	$r_{1,32} \quad 0.093$	$r_{1,32,4} \quad 0.095$
	$r_{1,34} \quad 0.145$	
$r_{14} : 0.104$	$r_{1,42} \quad 0.111$	$r_{1,42,3} \quad 0.112$
	$r_{1,43} \quad 0.108$	

1 Conception    2 Breastfeeding    3 Postpartum amenorrhoea    4 Age

controlled, was to increase slightly the value of the correlation between age and conception interval which means that as age increases the conception interval also increases. In this context, a word about the sample is worth-mentioning. Since the objective was to study the effect of breastfeeding in extending the conception interval, the sample had to be restricted to include women who had experienced at least two births and whose last child (if they had more than two children) was less than five years old. In the area considered, the average family size was less than three and hence, very few women were found to qualify for the study group. It would be interesting to extend this study to cover a large and heterogeneous sample, so that the effect of age can be studied in detail.

The multiple correlation coefficient ( $R$ ) was 0.25. The square of the coefficient ( $R^2$ ) shows that only 6 per cent of the variation in conception interval is explained by the three variables together. Obviously, there are other important explanatory factors. Since the purpose of the study was to see the impact of breastfeeding in lengthening the conception interval among non-contraceptors, other factors, although important were not considered. These may be included in further studies.

For non-contraceptors, the differential effect of breastfeeding (BF), postpartum amenorrhoea (PPA) and age on the conception interval is shown by the linear regression equations. Here 'y' (in months) is the conception interval.

$$y = 18.83 + 0.227 \text{ BF}$$

$$y = 21.05 + 0.261 \text{ PPA}$$

$$y = 16.04 + 0.286 \text{ Age}$$

This means that on average, one month of breastfeeding adds about 0.23 months to the conception interval. At the same time, for each month of breastfeeding, postpartum amenorrhoea is increased only by about 0.16 months ( $y = 3.48 + .162 \text{ BF}$ ) while the conception interval increases by 0.26 months

for each month of difference in the resumption of menstruation. The regression equation also shows that an increase in age by one month leads to an increase in conception interval of about 0.28 months. This analysis also corroborates the earlier findings.

The multiple regression coefficients presented in Table 4 reveal that age has the maximum effect on conception interval. This underlines the fact that age is an important variable in determining conception interval.

**TABLE 4**  
Summary results of multiple regression analysis

Variable	Regression Coefficient
<b>Model 1</b> (Three variables taken together)	
Breastfeeding	0.201
Postpartum amenorrhoea	0.176
Age	0.304
<b>Model 2</b> (Two variables taken together)	
Breastfeeding	0.198
Postpartum amenorrhoea	0.173
<b>Model 3</b> (Two variables taken together)	
Breastfeeding	0.229
Age	0.299
<b>Model 4</b> (Two variables taken together)	
Postpartum amenorrhoea	0.264
Age	0.294

One may arrive at several conclusions. First, as women become older, the milk flow may be reduced due to biological reasons, resulting in shorter periods of breastfeeding. We have seen that breastfeeding and postpartum amenorrhoea are interrelated and so the reduced period of breastfeeding may result in an earlier resumption of menstruation after childbirth. Second, since the woman is comparatively older and literate she may be aware of the advantages of increased spacing between children. As such, breastfeeding seems to be effective in the case of younger mothers. However, when the relative effects of breastfeeding and postpartum amenorrhoea are considered, breastfeeding is found to play a more important role.

### Path model

Figure 1 enables us to compare the direct versus indirect effects of breastfeeding, postpartum amenorrhoea and age of the women on the conception interval.

Table 5 shows that 93 per cent ( $0.189/0.204 = 0.93$ ) of the gross effect of breastfeeding results from its direct influence.

TABLE 5

Decomposition of total effects of breastfeeding, postpartum amenorrhoea and age on conception

Variables	Type of effect	Value
<i>Breastfeeding</i>	Direct effect	0.183
	Indirect effect	
	Through postpartum amenorrhoea	0.024
	Through age	-0.002
<i>Postpartum amenorrhoea</i>	Direct effect	0.090
	Indirect effect	
	Through breastfeeding	0.050
	Through age	-0.001
<i>Age</i>	Direct effect	0.110
	Indirect effect	
	Through breastfeeding	-0.004
	Through postpartum amenorrhoea	-0.001

The total indirect effect was 0.021 (0.024-0.183). Thus the effect of breastfeeding through postpartum amenorrhoea in prolonging conception intervals is higher than its effect through age. At the same time, only 63 per cent of the gross effect of postpartum amenorrhoea resulted from its direct effect. Its effect through breastfeeding was higher than that through age. This analysis also helps us to understand the effect of breastfeeding on lengthening conception intervals. Here also the effect of age is worth noting.

#### *Average waiting time for the next conception*

As mentioned earlier, several studies have shown that breastfeeding has a contraceptive effect either directly or through postpartum amenorrhoea. At the same time, the average waiting time differs from place to place. Therefore it was of interest to study the average waiting time for the next conception in these women. Life table analysis was used to find out the average interval. Table 6 shows the life-table conception functions.

#### **Assumptions**

Assuming that all women are at duration 0 in the beginning, the value of  $nb_x$  and  $B_{x+n}$  are equal to  $nq_0$  for the category of exposure starting at duration 0

i.e.  $n b_0 = B_x = n q_0$

For subsequent categories of duration, the proportion having a conception in the interval  $x$  to  $x+n$  among all women, are the product of the proportion of women who have not conceived by duration  $x$  times the proportion having a conception between the duration  $x$  and  $x+n$  i.e.  $n b_x = (1-B_x)n q_x$

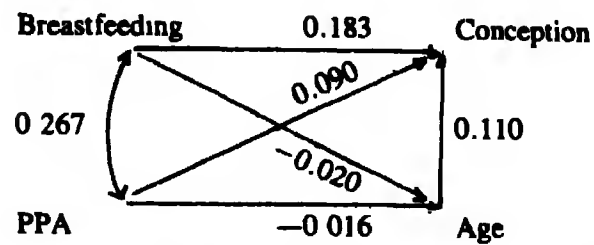


FIGURE 1  
Path diagram showing the direction of relationship between variables

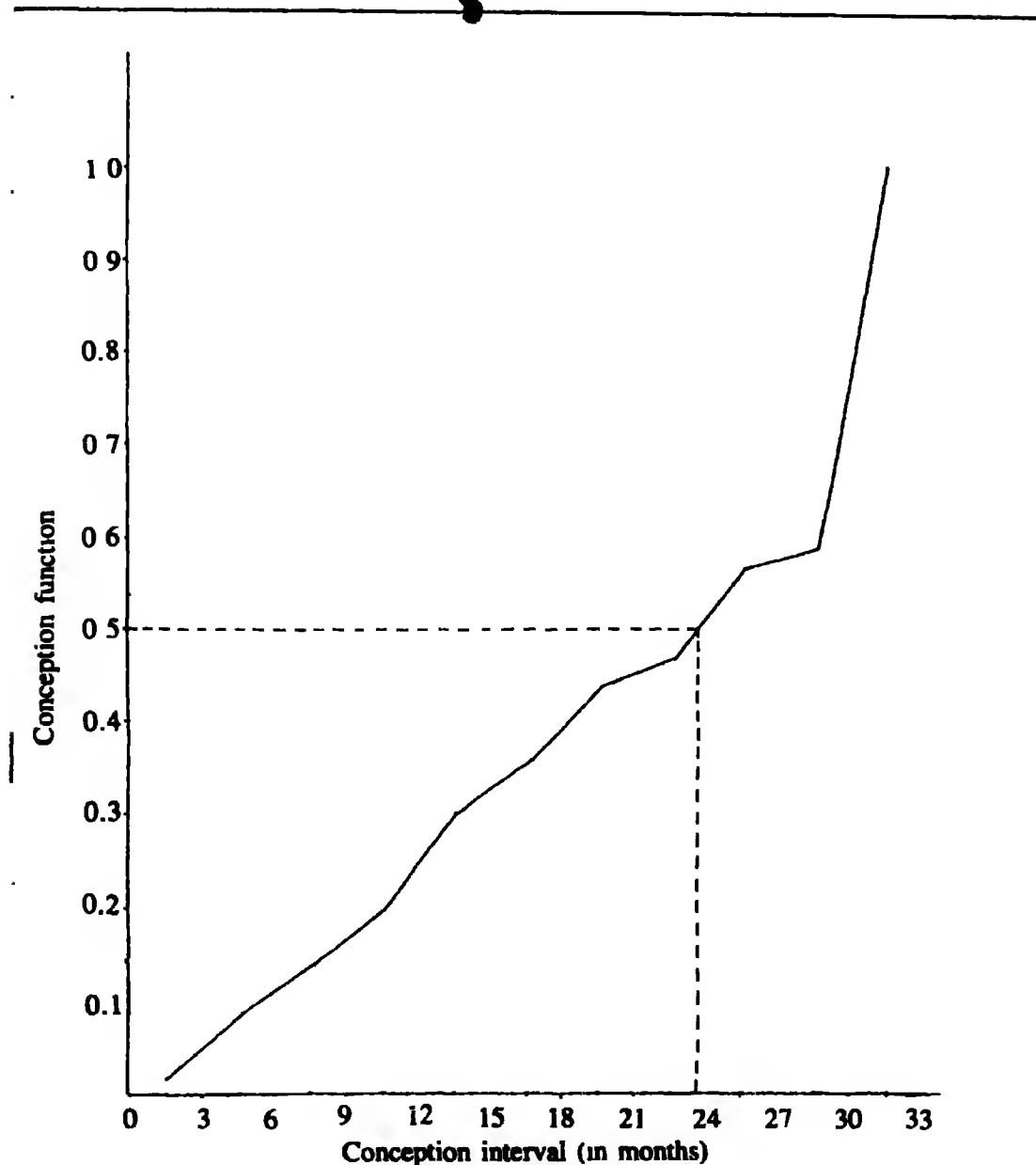


FIGURE 2  
Average waiting time for next conception

TABLE 6

## Life-table conception functions

Months from first child (1)	nEx (2)	Nx (3)	nqx = Ex/Nx (4)	nbx (5)	Bx + n (6)
0-3	7	415	0 0169	0.0169	0 0169
3-6	31	408	0 0760	0 0747	0 0916
6-9	20	377	0 0531	0 0482	0 1398
9-12	26	357	0 0728	0 0626	0 2024
12-15	41	331	0 1239	0 0988	0 3012
15-18	23	290	0.0793	0 0554	0 3566
18-21	33	267	0 1236	0 0795	0.4361
21-24	16	234	0 0680	0 0296	0 4657
24-27	41	218	0 1881	0 1005	0 5662
27-30	9	177	0 0508	0 0220	0 5882
30+	168	168	1 0000	0 4118	0 9999

x, x + n (Column 1) is the duration of exposure grouped as (x, x + n) where x refers to duration and n, width of the interval of exposure which is taken as to equal to 3 months in this study

nEx (Column 2) is the number of women having the first birth at any time before the interval of exposure prior to the interview

Nx (Column 3) is the number of women exposed to the risk of having next conception through each interval of exposure

nqx (Column 4) is the proportion of women having a conception in the interval x to x + n among women who have not conceived at the beginning of the interval i.e.  $nqx = nEx/Nx$

nbx (Column 5) is the proportion of women having a conception in the interval x to x + n among all women

Bx + n (Column 6) is the cumulative proportion of women having a conception by x + n among all women (conception function)

The cumulative proportion having a conception interval by x + n among all women is calculated as the sum of the proportion having a duration by x and the proportion having a duration between x and x + n.

i.e.  $Bx + n = Bx + nbx$

Figure 2, drawn using these Bx values, gives the average conception interval as 23.5 months which can be considered as the average waiting time for the next conception. Thus, in an area where no modern contraceptives are available or in less use, the use of breastfeeding as a birth spacing method should be emphasised. With increasing modernisation, there may be a tendency to decrease the prevalence and duration of breastfeeding<sup>13</sup> although no conclusive evidence is available yet on this in developing countries. Those women in the population who no longer nurse their babies are therefore exposed to longer periods of risk and may have higher fertility unless there is an increase in birth control practices.

## Conclusion

Zero order correlation analysis showed a positive relationship between

breastfeeding and conception interval. The mean duration of breastfeeding was 16 months but the average conception interval extended upto 23 months. The partial correlation coefficients suggest the effect of age on breastfeeding in reducing the conception interval. The small size of the sample may be the explanation for this. If we choose a large sample we can further study the direction of the combined effect of these factors in lengthening conception intervals. However, all the three types of analyses have revealed the paramount effect of breastfeeding in prolonging the conception interval especially when the women are younger and are not using any contraceptives.

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# **FAMILY SIZE AND ACADEMIC ACHIEVEMENT OF CHILDREN**

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## **Introduction**

The presence of a large number of siblings in a family is an adverse element as far as academic achievement is concerned.<sup>1-2</sup> Statistics related to poverty show that there is a direct relationship between the size of the family and the risk of poverty.<sup>3</sup> Maintaining a large family on an inadequate income puts severe strains on adults and children alike. In terms of parent-child interaction in large families, there is a possibility that some members of the family will not have adequate contact with their parents because of a lot of children competing for attention.

Children from large families are not likely to receive the same amount or the same type of verbal stimulation from adults which children from smaller families obtain, and consequently, children from large families tend to do less well academically. Family size prevents children from taking full advantage of educational opportunity and may promote backwardness in school.<sup>4</sup> The success of children at school varies with family size.<sup>5</sup> In their extensive longitudinal study, Davie and his colleagues<sup>6</sup> found that irrespective of social class children from large families tended to do less well in school. This may well be a direct consequence of the fact that in large families parents normally have less time to spend with individual children and the latter therefore receive less verbal and other forms of stimuli within the home. Obviously, teachers can do nothing about family size, but it behoves them to be aware of the educational disadvantage often experienced by children with many brothers and sisters and to see that everything possible is done to compensate for it within the school. Children from large families may also prove particularly prone to demand teacher attention to make up for the lack of adult attention within the home, and the teacher who is aware of the reasons for such demands is more likely to respond to them with the sympathy and patience that they warrant.

A number of studies<sup>7-12</sup> in developing countries have shown a negative correlation between family size and academic achievement of children. However, comparatively very few studies have been conducted in Africa, and no studies in Transkei.

The purpose of this study was to examine the relationship between family

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size and academic achievement among African children in Transkei, South Africa. This was done by testing the following hypothesis:

There is a relationship between the number of children in the family and their academic achievement.

### **Sample and Methodology**

The sample chosen for the study included both urban and rural Transkeian school children in order to have a fairly wide variation in family size. A stratified random sample of 369 boys and 652 girls in the age range of 13 to 17 years were selected from 14,765 boys and 26,109 girls who represented the total Standard 7 population in Transkei.

General Ability Scores of the Aptitude Test Battery standardised for the Xhosa pupils by the Human Science Research Council (1974) was used to choose pupils of average ability. Pupils who obtained stannines 4 to 6 were selected for the study.

The instrument used to provide an objective estimate of family size was a student questionnaire on the number of children living in the family. A junior secondary school teacher who taught the sample children in each school chosen for the study, and at the same time lived in the community of the children, verified the information given by the pupils by an interview with the parents.

The marks obtained by the pupils at the Standard 7 external examination conducted by the Department of Education of the Government of Transkei in 1984 in seven of the following subjects were used as the criterion measure: Xhosa, English, Mathematics, General Science, History, Geography and Agricultural Science. The maximum number of marks for Xhosa was 400, and that for each of the other six subjects was 300.

The student questionnaire was administered to 1021 Standard 7 pupils.

In this study, family size means the number of children in the family. Family sizes 1 to 2, 3 to 4, 5 to 6, 7 to 8 and over 8 were categorised as categories 1, 2, 3, 4 and 5 respectively to compute an analysis of variance of the mean achievement scores by family size.

### **Results**

In the first analysis as shown in Table 1, under Group A, the academic performance of pupils showed a decreasing trend as family size increased. The analysis of variance showed the negative relationship between the two variables to be statistically significant [ $F(4,1015) = 240.81, P = 0.01$ ].

In the second analysis, the socio-economic status of parents was controlled. The first group consisted of children of parents of low socio-economic status, and the second of children of parents of high socio-economic status. The academic performance of pupils of low socio-economic status showed

TABLE 1

Family sizes, mean achievement scores, and standard deviations of pupils with socio-economic status (SES) and sex not controlled and controlled

Parental group	Sex of pupils	Family Size	n	Achievement		M
				Mean	S.D	
Group A of low & high SES	Male	1	161	1184.04	200.12	1005.91
		2	168	1183.58	81.40	
	Female	3	167	1010.41	70.18	
		4	385	882.88	123.95	
		5	147	920.86	168.98	
Group 1 of low SES	Male	1	61	997.56	198.13	942.72
		2	60	1141.83	73.95	
	Female	3	148	1007.11	73.55	
		4	356	873.11	123.16	
		5	130	942.42	151.34	
	Male	1	18	1044.72	72.39	983.43
		2	46	1145.22	82.91	
		3	37	1066.73	77.82	
		4	104	891.41	57.64	
		5	35	947.51	149.90	
	Female	1	43	977.81	229.36	922.19
		2	14	1130.71	29.22	
		3	111	987.23	60.45	
		4	252	865.56	105.16	
		5	95	940.55	152.61	
Group 2 of high SES	Male	1	83	1283.10	69.94	1196.14
		2	103	1208.56	76.75	
	Female	3	19	1036.11	21.21	
		4	28	1001.29	48.23	
		1	9	1296.00	73.79	
	Male	2	52	1216.94	76.53	1222.75
		3	1	1122.00	-	
		4	1	966.00	-	
		1	74	1281.53	69.82	
		2	51	1200.02	76.77	
	Female	3	18	1031.33	4.26	1186.28
		4	27	1022.59	48.64	

a decreasing trend as family size increased. Analysis of variance showed the negative relationship between the two variables to be statistically significant [ $F(4,749) = 77.79$ ,  $P = 0.01$ ]. Similarly the academic performance of the second group of children of high socio-economic status showed a decreasing trend as family size increased [ $F(3,228) = 156.06$ ,  $P = 0.01$ ].

In the third analysis, socio-economic status of the parents and sex of the pupils were controlled. The low socio-economic status group comprised of two groups of 'boys' and 'girls'. The high socio-economic status group also comprised of two groups of 'boys' and 'girls'. The academic achievement of each of the groups of 'boys' and 'girls' of low socio-economic status

showed a decreasing trend as their family size increased [ $F(4,234) = 36.55$ ,  $P = 0.01$ ;  $F(4,509) = 34.47$ ,  $P = 0.01$ ]. Similarly the academic achievement of each of the groups of 'boys' and 'girls' of high socio-economic status showed a decreasing trend as their family size increased.

Analyses of variance showed the negative relationship between the two variables to be statistically significant ( $F(3,58) = 7.25$ ,  $P = 0.03$ ;  $F(3,165) = 157.22$ ,  $P = 0.01$ ). Children in small families outperformed children in large families. The results given in Table 1 mean that there is a significant negative relationship between the family size of children and their academic achievement. The negative relationship between the two variables means that as family size increases, academic performance of the children decreases or in other words, of the two children from families of different sizes, the child from a larger family size achieves, in general, a lower score in academic achievement. Therefore, the hypothesis that there is a negative relationship between family size of children and their academic achievement was supported.

### Discussion

The above findings indicate clear support for the hypothesis that family size of children is related to their academic achievement. Without control for socio-economic status, there was a decreasing trend in academic achievement as family size increased. A similar pattern was maintained when the socio-economic status of the parents was controlled. When sex of the children was also controlled, a negative relationship was still found to exist between family size and academic achievement of boys as well as girls, the findings of earlier research workers<sup>1 2,8 9 11 16</sup> are confirmed.

Several environmental explanations have been given to account for the detrimental impact of family size (sibship size) on academic achievement<sup>17</sup>. These state that the adverse effects of family size on academic achievement are related to intellectual capacity. Blake<sup>18</sup> theorises that the impact of family size is due to the dilution of resources that can be allocated to any child. Blake's dilution theory covers the hypothesis on family size that has been accepted. The economic resources hypothesis<sup>17</sup> postulates that the per capita material resources that parents can distribute to any given child necessarily decline as families grow in size. As the number of siblings increases, the number of a child's competitors for scarce resources rises. In essence, the siblings upon each other's pool of resources.

Children in large families, who have less personal contact with adults, have fewer opportunities of acquiring and manipulating verbal symbols, and are therefore at a disadvantage not only in terms of verbal fluency and width of vocabulary but also in the thought processes which depend so largely on the acquisition of these verbal skills transmitted by adults.

Western sociologists and psychologists contend that family size affects

the scholastic achievement of the child because parents with many children are unable to give enough attention to their individual children. Similarly, emotional satisfaction and psychological security which result from close contact between parents and children are reduced in large families and this could be true of Transkeian families.

The relationship between family size and the academic achievement of children found in this study shows the influence of the former on the latter in the Transkeian context.

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# **AGRICULTURAL MODERNISATION, ITS ASSOCIATED FACTORS AND FERTILITY BEHAVIOUR**

**DR. P.V. MURTHY\***

## **INTRODUCTION**

Agricultural modernisation has attracted considerable attention among social scientists in recent times, because an overwhelming proportion of the rural population derives its livelihood from agricultural production. Agricultural modernisation has increased the area of land under mechanisation, mechanised irrigation and led to a greater adoption of high yielding varieties. It has also increased the use of chemicals, fertilisers, plant protection measures, the output and thereby improved the living standards of the rural people. Improvement in the standards of living lead to higher levels of schooling, increased age at marriage, more access to health facilities, lower level of infant and child mortality and higher use of contraception. Increases in income may also lead to greater educational aspirations, urban contacts, new tastes for modern consumer goods and services which raise the costs of rearing children, finally resulting in a reduction in fertility.

## **OBJECTIVES**

Although this topic has often been discussed in general terms, very few studies have dealt specifically with agricultural modernisation and fertility. Even the few micro level studies<sup>1-5</sup> that have been undertaken have covered only one or two dimensions of agricultural modernisation. As such, the effect of agricultural modernisation on fertility behaviour at the micro level is of utmost importance because of its significant contribution to socio-economic and demographic changes. Thus, in order to direct future policies on to the right path, a clear understanding of the impact of agricultural modernisation on fertility behaviour is essential. Hence, the present paper attempts to study the influence of agricultural modernity on fertility behaviour.

## **METHODOLOGY**

Two sets of villages called as the experimental and control groups were studied on a comparative basis for the present study. Villages which have witnessed significant agricultural development following the introduction of irrigation at least 15 years ago and have taken advantage of the facility by changing the cropping pattern and adopting mechanisation were considered

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as experimental villages. Control villages (selected from the some district) were those which did not have significant irrigation facilities or development through any other means. The experimental villages were labelled as agriculturally developed villages and the control villages, as agriculturally backward villages.

A total sample of 600 couples in Chittoor District of Andhra Pradesh comprising of 300 couples from agriculturally developed villages and 300 from agriculturally backward villages were studied. The sampling unit for the study was a household having at least one couple with one or more living children, and the wife in the reproductive age of 15-44 years. An interview schedule was used for data collection.

## RESULTS AND DISCUSSION

The interaction between agricultural development, its associate factors and demographic change is of obvious importance, since the majority of the population in developing countries is rural and earns its livelihood through agricultural occupations. As such, this paper attempts to examine the combined effect of agricultural modernisation and its associated factors (socio-economic status and general modernity) on fertility behaviour.

### Agricultural Modernisation and Fertility Behaviour

In order to study the cumulative effect of all the independent agricultural modernisation variables on fertility behaviour, an index, based on 10 important agricultural modernisation dimensions, was developed. The dimensions were (a) total landholding; (b) source of irrigation; (c) system of irrigation; (d) value of the produce (rabi season); (e) value of the produce (kharif season); (f) use of seeds of high yielding variety; (g) adoption of plant protection measures; (h) total number of labourers hired; (i) farm assets; and (j) livestock. Based on the composite score assigned to them by giving appropriate weightage, the respondents were stratified as agriculturally "less modern", "intermediate", and "more modern".

Table 1 analyses the relationship between agricultural modernisation and fertility behaviour among the respondents.

Significant differences were observed between the respondents of backward and developed villages in relation to their agricultural modernisation (Table 1). There were twice as many respondents who were agriculturally "more modern" in the developed villages (27%) as compared to the backward villages (13%). On the other hand, more than one-third (35%) of the respondents in the backward villages, as against one-sixth (18%) in the developed villages were "less modern". Further, those having intermediate agricultural modernity were also higher in the developed villages as compared to backward villages.

TABLE 1

Percentage distribution of respondents in backward and developed villages by agricultural modernisation index and fertility

Level of agricultural modernisation (score)	Backward Villages		Developed Villages		Total	
	%	M L.B.	%	M.L B	%	M.L B
Less modern (10-21)	34.67 (104)	3.22 (104)	18.00 ( 54)	3.02 ( 54)	26.33 (158)	3.15 (158)
Intermediate (22-32)	52.00 (156)	2.96 (156)	55.33 (166)	2.79 (166)	53.37 (322)	2.87 (322)
More modern (33-43)	13.33 ( 40)	2.73 ( 40)	26.67 ( 80)	2.27 ( 80)	20.00 (120)	2.42 (120)
Total	100.00 (300)	3.02 (300)	100.00 (300)	2.69 (300)	100.00 (600)	2.85 (600)

M.L B = Mean live births

In both backward and developed villages, a gradual decrease in the fertility level of the respondents was observed with an increase in the level of agricultural modernity. The respondents in the backward villages who were agriculturally more modernised had 0.49 live births less than those who were "less modern" (significant at 0.05 level). The corresponding figure in the developed villages was 0.75 live births (significant at 0.01 level). These findings indicate that differential fertility between the respondents of backward and developed villages was largely due to the existing variations in their levels of agricultural modernity.

### Agricultural Modernisation, Socio-economic Status and Fertility Behaviour

The relationship between agricultural modernisation and socio-economic status in relation to the desired family size of the respondents is analysed in Table 2.

An index of socio-economic status was constructed by combining such variables as education of the couple, gross income, type of house, house electrification and modern durables. Based on the cumulative score, the respondents were classified into three broad socio-economic status levels: Level I or low socio-economic status; Level II or middle socio-economic status), and Level III or high socio-economic status).

An inverse relationship between socio-economic status and fertility was noticed in all the agricultural modernisation groups confirming the strong negative relationship between socio-economic status and fertility behaviour on the one hand, and agricultural modernisation and fertility on the other hand. With an increase in the levels of agricultural modernisation, the proportion of respondents with high socio-economic status also increased and the desired family size decreased considerably. This trend was observed in



both sets of villages.

TABLE 2

**Fertility behaviour of the respondents in backward and developed villages by agricultural modernity index and socio-economic status (SES) index**

Level of agricultural modernisation	Desired Family Size							
	Backward Villages				Developed villages			
	Level I (Low SES)	Level II (Middle SES)	Level III (High SES)	Total	Level I (Low SES)	Level II (Middle SES)	Level III (High SES)	Total
Less modern (10-21)	3.56 (82)	3.02 (18)	2.98 (4)	3.44 (104)	3.33 (36)	3.01 (18)	—	3.22 (54)
Intermediate (22-32)	3.56 (9)	3.16 (147)	—	3.19 (156)	2.98 (44)	2.86 (103)	2.45 (19)	2.84 (166)
More modern (33-43)	2.86 (15)	2.45 (4)	2.73 (21)	2.75 (40)	—	2.52 (28)	2.28 (52)	2.36 (80)
Total	3.46 (106)	3.12 (169)	2.77 (25)	3.21 (300)	3.13 (80)	2.81 (149)	2.32 (71)	2.78 (300)

S.E.S = Socio-economic status

Among the respondents who were agriculturally 'less modern', a significantly higher proportion were from the low socio-economic group in both backward and developed villages (79% and 66%), and desired large number of children (3.56 and 3.33 in backward and developed villages respectively). In contrast, among those who were agriculturally more modernised, the majority belonged to the higher socio-economic status group (52% in backward villages and 65% in developed villages) and desired the least number of children (2.73 and 2.28 in backward and developed villages respectively). Even those who were agriculturally more modernised but were from the low or moderate socio-economic groups desired less than three children as compared to agriculturally less modernised respondents.

Thus, agricultural modernisation and socio-economic status together as well as individually, was found to affect family size preferences.

### **Agricultural Modernisation, General Modernity and Fertility Behaviour**

For measuring the overall modernity of the respondents, a general modernity index was developed. This index covered various aspects such as the educational level of the couples, type of the family, possession of modern durables and farm implements, exposure to mass media, urban contacts, contact with government and banks, and social participation. The respondents were differentiated as 'more modern', 'medium', and 'less modern' on the basis of the total score secured by them on the above aspects.

TABLE 3

**Fertility behaviour of the respondents in backward and developed villages by agricultural modernity and general modernity**

Level of agricultural modernisation	Desired Family Size							
	Backward Villages				Developed villages			
	*	**	***		*	**	***	
	Level-I (13-24)	Level-II (25-36)	Level-III (37-48)	Total	Level-I (13-24)	Level-II (25-36)	Level-III (37-48)	Total
Less modern (10-21)	3 53 ( 81)	3 13 (21)	3 01 ( 2)	3 44 (104)	3 43 ( 40)	2 89 ( 3)	2 56 (11)	3 22 ( 54)
Intermediate (22-32)	3 20 (114)	3 20 (40)	2 56 ( 2)	3 19 (156)	3 05 (107)	2 73 (10)	2 41 (49)	2 84 (166)
More modern (33-43)	3 18 ( 12)	2 98 (13)	2 25 (15)	2 75 ( 40)	-	-	2 36 (80)	2 36 ( 80)
Total	3 32 (207)	3 14 (74)	2 36 (19)	3 21 (300)	3 15 (147)	2 76 (13)	2 39 (140)	2 78 (300)

\* Less modern'', \*\* Medium, and \*\*\* "More modern" with regard to general modernity

The general modernity level was also higher among the agriculturally more modernised respondents as compared to their agriculturally "less modern" counterparts. The overall trend showed that as the level of general modernity increased, fertility declined at all the three levels of agricultural modernisation. The mean desired family size of the respondents in the intermediate and higher agricultural modernity levels was lower than that expressed by the "less modern" group. This trend was noticed in both backward and developed villages.

Considering the two groups separately, it was observed that the fertility of the respondents with intermediate and higher level of agricultural modernisation was lower than that in the agriculturally "less modern" group. Further, the mean family size desired by respondents who had medium and high levels of general modernity was lower than that desired by those who had low general modernity. This trend was true for the respondents in both backward and developed villages.

Thus couples who were "more modern" both agriculturally as well as generally desired lower family size as against those who had lower modernity agriculturally and generally. The findings reveal that differences in general modernity and agricultural modernity inversely influence fertility. It is evident from these findings that the economic betterment and higher general modernity level resulting from agricultural modernisation were the main factors that influenced the fertility behaviour of the respondents. Hence, there is a great need to modernise agricultural productivity especially in backward villages through effective planning at the village level so as to reduce fertility. High yielding varieties of crops are to be raised by adopting scientific methods in greater tracts of land by educating and motivating the farmers.

Efforts have also to be made to modernise and develop the existing irrigation system. There is a need to increase the asset building capability of farmers with regard to land, implements and farm buildings. In addition, sufficient capital resources should be provided on easier terms at subsidised rates of interest especially to the small farmers to invest large amount on manure, fertilisers and pesticides. Further, effective extension and training programmes should be undertaken to create greater awareness among the farmers about modern farm technology, which yield higher returns.

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# **POST-ABORTION PSYCHOLOGICAL SEQUELAE**

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## **INTRODUCTION**

Today, worldwide, around 40 million abortions take place every year. The corresponding figure in India is 4 to 6 million of which one-third are spontaneous. It is common to assume that spontaneous abortions have a profound effect on the mother. Studies carried out in the West have suggested physical and mental health hazards following spontaneous abortion<sup>1,2</sup>. The psychological reactions observed in these women range from regret, feelings of guilt, neurotic reactions, personality trait disturbances, and depression<sup>2</sup>, and are different from those observed among women undergoing an induced abortion<sup>1,3</sup>. Although these studies are not free from controversy, their inferences cannot be applied to the present Indian milieu due to the totally different socio-economic and ethical norms.

## **OBJECTIVES**

In India, till now, no systematic and prospective study has been conducted to find out the psychological outcome of spontaneous abortions and to compare it with that of therapeutic abortion. It was therefore considered worthwhile to study the psychological reactions to spontaneous and therapeutic abortions.

## **SAMPLE AND METHODOLOGY**

One hundred cases undergoing spontaneous abortion at the Smt. Sucheta Kriplani Hospital, New Delhi, were taken as the study group. This group was matched age-wise with a control group of 100 women undergoing therapeutic abortion, to rule out the influence of the operative procedure. Only those women who did not have a past history of physical or psychiatric illness or chronic drug intake were included in the study.

The women were interviewed four times - just before, and soon after

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Efforts have also to be made to modernise and develop the existing irrigation system. There is a need to increase the asset building capability of farmers with regard to land, implements and farm buildings. In addition, sufficient capital resources should be provided on easier terms at subsidised rates of interest especially to the small farmers to invest large amount on manure, fertilisers and pesticides. Further, effective extension and training programmes should be undertaken to create greater awareness among the farmers about modern farm technology, which yield higher returns.

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undergoing the procedure, and 2 and 8 weeks thereafter. The first interview elicited the socio-demographic details of the respondents; and all four interviews recorded the degree of neuroticism\* on the PGI N-2 scale<sup>4</sup>, the degree of depression\*\* on the Hamilton Rating Scale for Depression<sup>5</sup>, and the presence or absence of guilt. A score of more than 9 and 10 was rated as high on both the N-2 and Hamilton scales. The Chi-square test was used for statistical analysis of the results.

## RESULTS

The main socio-demographic characteristics of the respondents are presented in Table 1. A little over half (54 per cent) of the respondents from the spontaneous abortion group and about one-fifth (22 per cent) of those in the therapeutic abortion group stated to have planned their pregnancy while in the rest of the cases, it was either due to lack of contraception, using a contraceptive irregularly, or method failure.

TABLE 1

### Socio-demographic characteristics of respondents

Characteristic	Spontaneous aborters (N = 100)	Therapeutic aborters (N = 100)
<i>Age (years)</i>		
15-20	21	24
21-25	52	49
26-30	18	19
31 & above	9	8
Average age at time of abortion (years)	24.2	23
<i>Education</i>		
Illiterate	52	47
Upto 5th class	29	26
6th-12th class	13	19
Graduation	9	8
<i>Number of living children</i>		
0	22	18
1	49	55
2	25	18
3+	4	9
<i>Number of previous abortions</i>		
0	64	58
1	21	26
2	10	9
3+	5	7

+ Neuroticism is defined as the propensity to develop neurosis under stress.

+ + Depression is an illness characterised by a relatively persistent sad mood or loss of interest or pleasure in almost all usual activities. It may be associated with other symptoms such as disturbances in appetite, sleep and libido, a feeling of worthlessness etc.

The degree of neuroticism observed in the two groups of women is presented in Table 2.

TABLE 2

Distribution of respondents by degree of neuroticism at various points of time

Respondent interviewed	Spontaneous aborters		Therapeutic aborters	
	(N = 1000)		(N = 100)	
	Score $\leq 9$	Score $> 9$	Score $\leq 9$	Score $> 9$
Before procedure	34	66*	52	48*
Soon after procedure	36	64	59	41
2 weeks after procedure	57	43	76	24
8 weeks after procedure	74	26**	92	8**

\*  $\chi^2 = 6.61$ ,  $df = 1$ ,  $P < 0.05$

\*\*  $\chi^2 = 11.48$ ,  $df = 1$ ,  $P < 0.001$

Respondents who had undergone a spontaneous abortion had significantly high scores on neuroticism at various points of time, as compared to those in the control group. After 8 weeks, 26 per cent of the spontaneous aborters continued to score high on the N-2 scale as compared to 8 per cent of those who had undergone a therapeutic abortion ( $\chi^2 = 11.48$ ;  $df = 1$ ;  $p < 0.001$ ). The improvement was, however, statistically significant in both groups after 8 weeks.

Table 3 indicates that in both groups, repeat aborters were present in a significantly greater number among those who scored high on the neuroticism scale.

TABLE 3

Distribution of first and repeat aborters with high neuroticism scores ( $> 9$ )

Respondent interviewed	Spontaneous aborters			Therapeutic aborters		
	First abortion	Repeat abortion	Total	First abortion	Repeat abortion	Total
Before procedure	24	42*	66	18	30*	48
After procedure	22	42	64	12	29	41
2 weeks after procedure	10	33**	43	4	20**	24
8 weeks after procedure	4	21***	25		9***	9

\*  $\chi^2 = 0.02$ ;  $df = 1$ ;  $P < 0.05$

\*\*  $\chi^2 = 0.40$ ;  $df = 1$ ,  $P < 0.05$

\*\*\*  $\chi^2 = 2.45$ ;  $df = 1$ ;  $P < 0.05$

The degree of neuroticism was also found to be related to the number of living children as observed in Table 4 which analyses the relationship between the number of living children of respondents who showed high



neuroticism scores of 9+. There was a significantly higher number of respondents with one child in both the spontaneous and therapeutic groups ( $\chi^2 = 7.94$ ;  $df = 1$ ;  $p < 0.01$ ).

TABLE 4

Distribution of respondents with high neuroticism scores by number of living children

Number of living children	Spontaneous aborters		Therapeutic aborters	
	Total cases	Score > 9	Total cases	Score > 9
0	22	2(9.09)*	18	14(77.8)*
1	49	38(77.6)**	55	28(50.9)**
2	25	7(28.0)+	18	6(33.3)+
3+	4	1(25.0)	9	0(0.0)
	100	66(66.0)	100	48(48.0)

\*  $\chi^2 = 1.34$ ,  $df = 1$ ,  $P > 0.05$

+  $\chi^2 = 0.141$ ,  $df = 1$ ;  $P > 0.05$

\*\*  $\chi^2 = 7.94$ ,  $df = 1$ ;  $P < 0.01$

Prior to the procedure, 39 per cent of the spontaneous aborters registered significant depression as compared to 9 per cent of those who underwent therapeutic abortion ( $\chi^2 = 20.43$ ;  $df = 1$ ;  $P < 0.001$ ) (Table 5).

However, eight weeks after the procedure, 18 per cent of the spontaneous aborters showed high scores on the Hamilton Rating Scale as compared to only 1 per cent of those in the therapeutic group ( $\chi^2 = 16.81$ ;  $df = 1$ ;  $P < 0.001$ ). Feelings of guilt were more frequently observed in the therapeutic group as compared to the spontaneous abortion group, though this was not statistically significant during any interview (Table 5). After 8 weeks of the procedure, the improvement was significantly high in both the groups ( $\chi^2 = 15.43$  and  $19.09$  respectively with  $df = 1$ ;  $P < 0.001$ ). There appeared to be a relationship between the presence of neuroticism or depression and the appearance of guilt - all the respondents reporting guilt feelings scored high on the N-2 scale or Hamilton Rating Scale for depression. Of the 28 spontaneous aborters who reported feelings of guilt prior to undergoing the procedure, 20 had no living child, 6 had one living child (4 had a female child and 2 had a male child), while 2 cases each had 2 living female children. In the therapeutic abortion group, of 36 cases with guilt feelings, 18 had no living child, 12 had one (8 cases had one female child and 4 had a male child), 4 had two and 2 had three children.

## DISCUSSION

About half of the women who had a spontaneous abortion were in the 21-25 year age group, illiterate, married and had one living child. They did not differ from those in the therapeutic abortion group. This finding is similar

TABLE 5  
Distribution of respondents by scores on Hamilton Rating Scale for depression and guilt feelings

Respondent interviewed	Score on Hamilton Rating Scale				Guilt feelings			
	Spontaneous aborters		Therapeutic aborters		Spontaneous aborters		Therapeutic aborters	
	Score < 10	Score > 10	Score < 10	Score > 10	Present	Absent	Present	Absent
Before procedure	61	39*	91	9*	28+	72	36+	64
After procedure	61	39*	91	9*	26++	74	28++	72
2 weeks after procedure	74	26**	94	6**	19++	81	23+++	77
8 weeks after procedure	82	18***	99	1***	8++++	92	10++++	90

\*  $\chi^2 = 20.43$ ;  $df = 1$ ,  $P < 0.001$

\*\*  $\chi^2 = 14.88$ ,  $df = 1$ ;  $P < 0.001$

\*\*\*  $\chi^2 = 16.81$ ,  $df = 1$ ,  $P < 0.001$

+  $\chi^2 = 1.47$ ,  $df = 1$ ,  $P > 0.05$

++  $\chi^2 = 0.32$ ,  $df = 1$ ,  $P > 0.05$

+++  $\chi^2 = 0.48$ ,  $df = 1$ ,  $P > 0.05$

++++  $\chi^2 = 0.24$ ,  $df = 1$ ,  $P > 0.05$

With reference to the analysis pertaining to guilt feelings, in the spontaneous abortion group, before procedure Vs after 8 weeks  $\chi^2 = 15.43$ ;  $df = 1$ ,  $P < 0.001$ , and in the therapeutic abortion group, the corresponding values were  $\chi^2 = 19.09$ ,  $df = 1$ ,  $P < 0.001$

to the observations made in other Indian studies<sup>6-8</sup>. Freeman et al<sup>9</sup> found 62 per cent of their total sample to be underage, 25.7 per cent had either no education or upto high school only, and 38.0 per cent had no living child.

There were a significantly greater number of respondents showing high neuroticism in the spontaneous abortion group as compared to the therapeutic abortion group. This finding is also similar to that reported by other workers<sup>3 10</sup>.

It is evident from the present study that the operative procedure alone contributed little to the presence of high neuroticism because immediately after the procedure, very little change in neuroticism levels was observed in both groups. It appears that respondents with high neuroticism scores prior to the procedure continued to harbour the reaction and showed a gradual improvement with the passage of time. Failure to continue the planned pregnancy in the spontaneous abortion group could be an important factor in this context. High neurotic scores may also be attributed to other factors such as conflict about the pregnancy, the effect of hospitalisation, fear of the operative procedure, etc. and not because the pregnancy was terminated<sup>10 11</sup>. This finding differs from that of Simon et al<sup>2</sup> who found more respondents with neuroticism in the therapeutic abortion group than among spontaneous aborters. The latter finding could result from the fact that his study also included women undergoing abortion for psychiatric and medical indications.

Repeat aborters were found to have high neuroticism scores as compared to those experiencing therapeutic abortion for the first time. This was observed in both groups, and suggests that fear of the operative procedure may not be the only factor responsible for high neuroticism; otherwise the previous abortion experience should have resulted in a lower degree of neuroticism. The pattern of neuroticism scores associated with repeat abortions suggest that these women exhibited a slower resolution of negative feelings associated with undesired abortion<sup>12</sup>. An abortion occurring at a time when the family is still not complete, may be an important contributory factor to adverse psychological sequelae. This is suggested by the present study where more women with no or one living child had high neuroticism scores.

More spontaneous aborters scored high on the depression rating scale as compared to therapeutic abortion cases indicating that the helplessness of women undergoing spontaneous abortion may contribute to the adverse outcome as compared to women undergoing induced abortion where the majority were prepared for the procedure. In the spontaneous group, the woman considers herself solely responsible for the outcome - although the male factor also contributes to a spontaneous abortion, it is not known to most husbands and wives. Some workers have reported that factors like ambivalence, poor marital, social and occupational adjustment prior to abortion, and prior

psychiatric illness and decisiveness about pregnancy and abortion, contribute to psychological illness and outcome of abortion<sup>12,13</sup>.

More women in the therapeutic group expressed feelings of guilt as compared to those in the spontaneous group but the difference was not statistically significant. This suggests that the operative procedure played little role in producing this feeling. This finding has also been reported by other workers<sup>2,12,14</sup>. Both groups showed significant improvement in guilt feelings eight weeks after the procedure. The feeling of guilt was significantly related to the degree of neuroticism and depression and showed improvement as the latter disappeared with the passage of time. In the therapeutic abortion group, the decision to abort the pregnancy is usually joint; sometimes dominated by the male. Hence the woman may not feel much sense of failure, but the necessity to terminate a healthy life is certain to cause guilt more often in this group<sup>12</sup>. Some workers attribute the feeling of guilt to the conscious or unconscious wish to get rid of pregnancy and the women seem to accomplish this in one way or another.

Kummer<sup>15</sup> has considered abortion akin to pregnancy and parturition, as a precipitating stress rather than the basic cause of psychiatric sequelae. However, from the present study it appears that women undergoing spontaneous abortion who show high neuroticism, depression and feelings of guilt are the ones who harbour such reactions before the procedure, and that this may be related to many factors such as parity, number of previous abortions, period of gestation, planning of pregnancy and abortion, marital, social and occupational adjustment, the effect of hospitalisation, her attitude and that of her family and the health personnel towards abortion, fear of the procedure, previous psychological status, etc. Factors such as age, literacy, marital and socio-economic status, type of family (nuclear or joint), number of living male children etc. are also reported to influence the psychological outcome of abortion. Therefore, careful screening, timely referral and appropriate psychiatric intervention is essential in vulnerable cases to avoid the adverse outcome of abortion, whether spontaneous or induced.

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# **INTERRELATIONSHIP BETWEEN BREASTFEEDING AND LACTATIONAL AMENORRHOEA IN A RURAL COMMUNITY OF HARYANA**

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**and**  
**DR. S.K. KAPOOR++**

## **INTRODUCTION**

Breastfeeding is most suited to the physiological and psychological needs of the individual infant. In the national context, a significant advantage of breastfeeding is its contribution to fertility control through the endocrinological spacing of births. Delivery is followed by amenorrhoea of variable duration<sup>1</sup>. For an individual mother, breastfeeding is not a reliable method of contraception, but at the community level, it makes a substantial contribution to birth spacing.

## **OBJECTIVE**

Breastfeeding then is the best form of nutrition for the young infant and an important means of spacing births<sup>1,2</sup>. The present study was conducted to find out the interrelationship between breastfeeding and lactational amenorrhoea in a rural community.

## **SAMPLE AND METHODOLOGY**

The present study was conducted in a rural area of Haryana in the villages of Dayalpur and Chhainsa at Ballabhgarh, with a population of about 4200 and 6000 respectively. All the houses in these two villages were contacted by making a door-to-door visit. Mothers who had children below three years of age were interviewed for breastfeeding practices. In case the mother had two children below three years of age, only the younger child was included in the study. Thus, a total of 577 mothers who were breastfeeding their children and 123 who were not doing so were enlisted for the study from these households. The interviews were carried out with the help of a pre-tested structured, semi open-ended coded schedule devised by the World Health

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Organization.

## RESULTS AND DISCUSSION

Table 1 presents a distribution of the women by the age of the child and the type of feeding practice in relation to the return of menstruation, while Table 2 presents an age-wise distribution of women who became pregnant without return of menstruation.

TABLE 1

**Distribution of mothers by age of child, breastfeeding practice and return of menstruation**

Age of child (months)	Breastfeeding		Not breastfeeding	
	No	ROM	No	ROM
0-5	139	17 (12.2)	6	4 (66.7)
6-11	154	61 (39.6)	14	12 (85.7)
12-17	110	67 (60.9)	13	12 (90.3)
18-36	174	170 (97.7)	90	90 (100.0)
Total	577	315 (54.6)	123	118 (95.9)

ROM = Return of menstruation

The figures in brackets denote percentages

As seen in Table 1, 12.2 per cent of women who breastfed their infants started menstruating within five months of the birth of the child. The proportion in the non-breastfeeding group which had a smaller sample size, was 66.7 per cent. Other studies<sup>3,4,5,6</sup> have also shown a good correlation between breastfeeding and lactational amenorrhoea.

At the time of interview, 107 mothers were pregnant. All of them had conceived after the index child was six months of age or more (Table 2).

TABLE 2

**Distribution of mothers by age of child, breastfeeding practice and pregnancy status**

Age of child (months)	Breastfeeding		Not breastfeeding	
	Total	No pregnant	Total	No pregnant
0-5	139	0 (0.0)	6	0 (0.0)
6-11	154	9 (5.8)	14	1 (7.1)
12-17	110	8 (7.3)	13	4 (30.8)
18-36	174	22 (12.6)	90	63 (70.0)
Total	577	39 (6.7)	123	68 (55.3)

The figures in brackets denote percentages.

Over half (68/123 or 55.3 per cent) of the mothers who were not

breastfeeding their children were found to be pregnant as compared to only 6.7 per cent (39/553) of those who were nursing their children. This trend was seen in all the age groups. It is possible that a decreased duration of lactation may result in the early return of menstruation and a subsequent shorter inter-pregnancy interval if the woman remains unprotected. In a WHO study<sup>7</sup>, conception was found to occur in only 7 per cent during lactation, but lactation offered no protection after the normal cycles of menstruation were reestablished. A report<sup>8</sup> from Chile indicates that in mothers who exclusively breastfed their children, the first ovulation took place only after 112 to 190 days as compared to mothers who were not breastfeeding and in whom ovulation returned after 50-60 days.

The proportion of women having conceived without experiencing a return of menstruation was 5.6 per cent (6/107) at the time of interview.

A WHO study<sup>7</sup> conducted in India and other studies<sup>5</sup> have also reported the rate of conception during lactational amenorrhoea to be 7 per cent.

Thus, the present study provides further evidence that breastfeeding gives some contraceptive effect for spacing the next pregnancy because of lactational amenorrhoea, and only very few mothers had become pregnant without return of menstruation. Therefore, correct information about the benefits of breastfeeding including its contraceptive effect should be given to all mothers during the antenatal period, at the time of delivery, during the postnatal period or whenever she seeks medical help for herself or visits a well baby clinic. At the same time, advice about the use of other methods of contraception must be given since she cannot solely depend on breastfeeding for protection, especially when the child begins to be fed with solid foods.

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## **BOOK REVIEW**

**Title: Developmental Migration: A Processual Analysis of Inter-State Rural-Rural Migration**

**Author : B.R.K. Raju**

**Publishers : Concept Publishing Co., New Delhi 110 059**

**Year of publication : 1989**

**Price : Rs. 130**

In this book, the author makes an in-depth study of 100 selected peasant/labour migrants from a village named Ardhavaram in the district of west Godavari, Andhra Pradesh, to six scatter settlements in Siruguppa Taluq - which experienced benefits of Tungabhadra Project - in Karnataka State. As expected from a scholarly writer, the book is well-organised and nicely written. The author collected data of about the migrants at their destination in 1978-79, but the data refers to moves made between 1960-70 (page 19) That is, this study in fact describes the situation of migration that occurred during 1960-70, but about which data was collected ten years later; the book appeared another decade later. While the tenacity of the researcher must be appreciated, at the same time the findings should have been interpreted with reference to that time-point.

The book has eight chapters. After briefly discussing the conceptual dimension of migration in the first chapter, the author explains in the subsequent two chapters his universe and sample study, and makes an in-depth analysis of the situation in the village of origin, Ardhavaram. In Chapter 4, he compares the economic situation of the migrants and the non-migrants at the place of origin. The next two chapters are devoted to explaining the migration - decision-making process, including the "push-pull" factors behind migration, and the adjustment process of the migrants at the destinations. In chapter seven, he probes into the detailed case histories of ten cases of return migration to the village of origin. The author's focus on the migration adjustment process at destination and upon return migration are rarely-touched aspects of migration studies in India, and are welcome additions. Finally, in the eighth chapter, the author provides a brief summary of his findings and makes a few general statements about developmental migration.

The author provides many short tables in support of his findings; as such, the analysis is descriptive, not quantitative - neither statistical nor mathematical. However, the major findings are : (1) 58 per cent of the migrants were small farmers and landless agricultural labourers, compared to only 12 per cent belonging to those groups among the non-migrants at origin (page

56); (2) due to migration to Tungabhadra region, their economic condition improved considerably; e.g. according to data collected by him in 1978-79-80 (though moves were made during 1960-70), 49% had land holdings between 3-9 acres, and another 37% had holding above 9 acres at the destination (page 70); and 60% had an annual income above Rs. 10,000 (i.e. in 1978-79, not just after the move) (page 70); (3) 72 per cent of 100 such migrants studied said that they were feeling excited and very happy about their move (page 57); (4) only 10 per cent had returned to origin villages due to sundry reasons of dissatisfaction at destination (page 99). The author concludes that the purpose of this migration is betterment of their conditions, i.e. "pull factors" have caused such migration, "not abject poverty" (page 125). According to him, thus, this migration justifiably could be termed as developmental migration (page 125, concluding chapter). And, right from the beginning the author is concerned with finding out such features of developmental migration. So, in short, by reading the book gives one the impression that such developmental migration is occurring in some parts of India. Although the author does not make an explicit generalisation of his study, this is implicit in the introductory chapter, as well as in the final epilogue. For instance, he begins his book by stating : "In the context of the green revolution, we witness today a new phenomenon of surplus labour from the rural areas of neighbouring states reaching various places which have witnessed tremendous rural prosperity. It is this type of rural to rural migration and remittances from one area to another which is a new development on migration scene" (page 4). And, he is concerned with a study of the impact of such rural development on rural-to-rural migration. But, while doing so, he has not selected and studied widely varying villages in the so-called green revolution belts - neither in northern India nor in Southern India, but has arbitrarily selected those six scattered settlements in Tungabhadra region of Karnataka in which all the migrants came from a single village, Ardhavaram of Andhra Pradesh. This then cannot be said to be a representative sample of all the migrants who migrated to different villages in the Tungabhadra region, nor it can be a representative sample of all the migrants from all the villages of origin in Andhra Pradesh. Neither has the conflicting situation of the migrants in green revolution belts/rural development projects of northern India/Southern India studied, nor have the findings of this so-called developmental migration of only 100 cases been compared with the completely contradictory findings of other areas. Such selection bias may leave an untenable impression upon the general reader and upon the minds of migration-researchers that probably, and hopefully, such developmental migration is occurring at a generalised level, across many rural places over the national space of India.

In the final epilogue also, while the author is summarising his entire study and making a few general comments, he emphasises that such migration does

not occur due to abject poverty; although he himself has demonstrated (page 56) that 58% were either landless or very small farmers at the village of origin. It needs a more correct interpretation that landlessness and marginal nature of farming to induce such migration. If this is not poverty-induced migration, what could this be then?

A recent report in the Indian Express (April 13, 1990) that 5 millions of "migrant" slum dwellers of Greater Bombay are ordered to be evacuated according to a High Court order. Evidently, these are wretchedly poor migrants from "rural" areas living in poignantly sad conditions in urban slums.

Does there exist one India, in which the millions of the poor, landless, illiterate, agricultural labourers, petty farmers, and other unskilled operatives from "pauperised villages" are compelled to migrate and to crowd into the extreme filth and inhuman squalor of urban slums and the city pavements just to eke out miserable living, in the one hand; and is there another India, where exists a completely different developmental migration streams of the young, energetic dynamic rural people moving into another "rural" area for fortune, prosperity, and betterment, who are purchasing new and sizeable agricultural land and demonstrating a high-order socio-cultural adjustability in the destination places, as this book makes us to believe, on the other?

If such prosperous "rural" areas do really exist extensively in India, then, why are millions of migrants not moving there? Why are they forced to migrate and live in such abject indignity in urban slums.

The answer to such a basic and crucial question cannot be found from this book, because the author was concerned with studying "developmental" migration, a phenomenon which if at all, occurs in a very few localised spots in the country. It is just a tiny drop in the ocean of massive poverty-induced and poverty-syndromed migration.

The findings of this book may be treated just as a case study of a purposefully-selected origin village and a few similarly-chosen few destination villages; but the author did not categorically mention this aspect of case study.

In fact, the pitiable conditions of rural-to-rural migrants even in the green-revolution belts/rural development projects are just the opposite in many areas of India, and have been described in (à la Breman himself) a series of articles by R. Banerji in "Aaj Kaal" and in English dailies (Calcutta) as far back in 1981.

Recently Ms. Nalini Singh, a noted journalist, has described the most shocking condition of the migrant workers in Andhra Pradesh (Indian Express, May 6, 1990) about which the book is concerned. Even then, the rural migrants from far-flung states keep flocking into those areas, because their choice is limited between quick death in the origin villages and slow starvation in the place of "prosperous" destination.

Such labour migration in India, I firmly believe, can be better understood as spatial manifestations of underdevelopment, poverty, and spatial disorganisation. Here, by underdevelopment, I do not mean, a lower stage of development, nor a lagging behind, but rather a specific kind of distorted development, an anti-development, introduced by colonialism - leading to a consequent, dependent nature of spatial economy, distorted spatial organisation, widespread poverty, regional disparities, polarised growth of a few regional pockets and a few privileged classes, and a low level of agricultural and industrial development.

We need to have a correct perspective. If our perspective is wrong; our policy prescriptions will also be wrong. I have been impelled to draw attention to such agonising processes in migration, not as criticisms of the book, but rather in the interest of such larger and crucial issues which affect the lives of the millions of the underprivileged in India and in the Third World. One is not questioning the author's data, nor disbelieving his findings; but for the unfoldment of the general truth one really needs to know what is really happening regarding the causes and consequence of migration in India ?

The comments therefore may be taken in this spirit admitting that developmental migration, as narrated in this book, may be occurring in a small scale at some localised areas, but urging at the same time to all the migration researchers to move on to identify, to study, and to change massive poverty-syndromed labour migration that has been agonising the lives of millions in India and the Third World.

Through this book, Prof. Raju has demonstrated a remarkable tenacity and perseverance in migration research; and I sincerely hope that he, concerned as he is with development aspects of people, will greatly contribute, as well, to relieve and change human migration induced by poverty and underdevelopment.

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1. To disseminate knowledge and education about, and to promote the adoption of, the practice of family planning for the advancement of basic human rights, family and community welfare, the achievement of a balance between population, resources and the environment, and the attainment of a higher standard of quality of life
2. To assist wherever possible in national programmes of family planning by undertaking to carry out various activities of a complementary, supplementary or innovative nature
3. To study and formulate policies and programmes regarding the provision of measures for family planning, population control and allied subjects, and place its considered views and advice before Government and other agencies whenever appropriate
4. To undertake or promote studies and activities in regard to services, training education and research programmes covering the demographic, sociological, economic, medical and other relevant aspects of human fertility and its regulation, including methods of contraception, sterility, and sub-fertility, sex and family life education, marriage counselling, population education and human ecology
5. To collect information and statistics and to organise conferences, seminars, training courses and other meetings, whether local, national or international, in the furtherance of the Aims and Objects of the Association
6. To establish Branches and other units for the promotion of the Aims and Objects herein
7. To foster and develop contacts with other organisations engaged in similar types of work in India and abroad

Clauses 8 to 18 deal with administrative and financial subjects

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